BLM LIBRARY
88045291

CAJON

FINAL

ENVIRONMENTAL IMPACT REPORT/STATEMENT

Volume I

EIP ASSOCIATES

PROPOSED
CAJON
PIPELINE
PROJECT

CAJON
PIPELINE
CO., LTD.

PREPARED FOR
BUREAU OF
LAND
MANAGEMENT
AND
THE CITY OF
ADELANTO

JUNE,
1993

SCH# 91082007

BLM LIBRARY
RS 150A BLDG. 50
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, CO 80225

ID88045291
TD 195 .P4 C356 1993 v.1

MARCH 3, 1849

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
California Desert District Office
6221 Box Springs Boulevard
Riverside, California 92507-0714

CA-27497
1792, 2880
(CA-060.5)

Dear Reader:

This Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the proposed Cajon Pipeline Project has been prepared in compliance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The Bureau of Land Management's preferred alternative is the Proposed Project, as described in this Final EIS/EIR, and modified by the Sycamore Segment.

During the public review of the Draft EIS/EIR, agencies and the general public expressed concerns regarding revegetation, system safety, location relative to an elementary school and mitigation monitoring. In response to these concerns, the proposed project and mitigation measures which would be imposed have been modified. Besides the changes incorporated into Volume 1 of the Final EIS/EIR, a new section entitled Mitigation Monitoring Program has been included in Volume II to assure compliance if the Cajon Pipeline Project is approved.

Consultation requirements under Section 106 of the National Historic Preservation Act of 1966 (as amended) have not been completed. The BLM will not issue any decision which may result in impacts to cultural resources without first having met the requirements of Section 106. All results of the Section 106 consultation will be incorporated into the ROD. Therefore, recommendations on cultural resources presented in this document may change somewhat during the consultation process, including recommendations of eligibility for inclusion on the National Register, recommendations of project effect, and recommendations for cultural resource mitigation.

We request your review and written comments, if any. Any written comments must be received by **August 16, 1993** and should be sent to:

Bureau of Land Management
ATTN: Stephen L. Johnson
6221 Box Springs Blvd.
Riverside, CA 92507-0714

Comments received will be addressed in the Bureau's ROD on this Final EIS.

Sincerely,

Henri R Bisson

Henri R. Bisson
District Manager

BLM LIBRARY
RS 150A BLDG. 50
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, CO 80225

CAJON

FINAL

ENVIRONMENTAL IMPACT REPORT/STATEMENT

Volume I

PROPOSED
CAJON
PIPELINE
PROJECT

CAJON
PIPELINE
CO., LTD.

PREPARED FOR
BUREAU OF
LAND
MANAGEMENT
AND
THE CITY OF
ADELANTO

PREPARED BY
EIP ASSOCIATES

JUNE,
1993

SCH# 91082007

CAJON PIPELINE PROJECT

FINAL

ENVIRONMENTAL IMPACT STATEMENT

ENVIRONMENTAL IMPACT REPORT

---

prepared by

City of Adelanto

and

Bureau of Land Management

cooperating agencies

- DEPARTMENT OF AGRICULTURE
  FOREST SERVICE
  SAN BERNARDINO NATIONAL FOREST
- DEPARTMENT OF DEFENSE
  DEPARTMENT OF AIR FORCE
  EDWARDS AIR FORCE BASE

Chamberlaine
Pat Chamberlaine
City Manager
City of Adelanto

Henri R Bisson
Henri R. Bisson
District Manager
California Desert District
Bureau of Land Management

CAJON PIPELINE PROJECT
SAN BERNARDINO AND LOS ANGELES COUNTIES, CALIFORNIA

( ) DRAFT **(X) FINAL**

Issued: June, 1993

Lead Agencies:

City of Adelanto
Adelanto, CA
(CEQA Lead Agency)

U.S. Department of Interior
Bureau of Land Management
California Desert District
Riverside, CA
(NEPA Lead Agency)

Cooperating Agencies:

U.S. Forest Service
San Bernardino National Forest

Department of Air Force
Edwards Air Force Base

For information contact:

Mr. Stephen Johnson
U.S. Department of Interior
Bureau of Land Management
6221 Box Spring Blvd.
Riverside, CA 92507
(909) 697-5234

Prepared by:

EIP Associates
80 S. Lake Ave.
Suite 600
Pasadena, CA 91101
(818) 568-1363

ABSTRACT

The Cajon Pipeline Company proposes to build a 142-mile-long, 20-inch diameter insulated buried pipeline from 12-Gauge Lake, (27 miles west of Barstow), California, to the Los Angeles crude oil terminals in Carson and Long Beach. Crude oil from the Santa Barbara Channel and the San Joaquin Valley would be delivered to 12-Gauge Lake by the existing All-American Pipeline. From there it would be conveyed to the Los Angeles Basin by the proposed Cajon Pipeline. The Cajon Pipeline would have a maximum capacity of 180,000 BPD but would be expected to operate at an average flow of 150,000 BPD. Two pump stations would be needed to move heated crude oil through the pipeline. One pump station, together with storage, would be located at 12-Gauge Lake. The other pump station, together with control and maintenance facilities, would be located at Adelanto.

The Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the proposed Cajon Pipeline Project includes an analysis of the environmental impacts of the proposed pipeline system during construction and operation. The EIS/EIR has been completed in accordance with the requirements of the California Environmental Quality Act (CEQA), as amended, The National Environmental Policy Act of 1969 (NEPA), and the Council on Environmental Quality's regulations for implementing NEPA. Based on the issues and concerns identified during the public scoping process, the EIS/EIR focuses on impacts to land uses; traffic congestion and access restrictions; noise level increases, air quality concerns; risk of oil spills and associated impacts, geologic hazards; onshore water resources; cultural resources; socioeconomic impacts; visual resources; and alternatives. Alternatives addressed in the EIS/EIR include different pipeline routes, methods of crude oil transportation (including tank trucks and railroad unit trains), and the "no project" option.

Comments must be received by: August 16, 1993

TABLE OF CONTENTS

VOLUME I FINAL EIS/EIR

Executive Summary i

1.0 INTRODUCTION 1-1

1.1 The Proposed Project 1-1
1.2 Purpose and Need for the Project 1-1
1.3 Relationship to Policies, Plans and Programs 1-4
1.4 Environmental Review 1-5
1.5 Content of the EIS/EIR 1-6

2.0 SYNOPSIS OF PROJECT AND ALTERNATIVES 2-1

2.1 Environmental Impacts of the Cajon Pipeline Project 2-1
2.2 Environmental Impacts of the Proposed Project Alternatives 2-1

3.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION 3-1

3.1 Introduction 3-1

3.2 Proposed Project (BLM Preferred Project) 3-1
3.2.1 Project Components 3-1
3.2.2 Project Operations 3-14
3.2.3 Project Construction 3-17
3.2.4 Project Abandonment 3-29

3.3 Project Alternatives 3-30
3.3.1 Introduction 3-30
3.3.2 Kramer Segment Alternative 3-30
3.3.3 Sycamore Segment Alternative 3-31
3.3.4 Etiwanda Terminal Alternative (BLM Preferred Alternative) 3-31
3.3.5 No Project Alternative 3-32
3.3.6 Project Alternatives and Route Variations Considered But Eliminated From Detailed Analysis 3-34

3.4 Marketing Alternatives to the Proposed Project Considered in Detail . 3-35
3.4.1 Introduction 3-35
3.4.2 M-70 Pipeline 3-38
3.4.3 Pacific Pipeline 3-40
3.4.4 Four-Corners Line 90 Pipeline 3-40
3.4.5 Marketing Alternatives Considered But Eliminated From Detailed Analysis 3-43

3.5 Relationship to Other Projects 3-44

4.0 AFFECTED ENVIRONMENT 4.0-1

4.1 Geology, Seismicity and Soils 4.1-1
4.1.1 Cajon Pipeline 4.1-1
4.1.2 Kramer Segment Alternative 4.1-13
4.1.3 Sycamore South Segment Alternative 4.1-14
4.1.4 M-70 Pipeline 4.1-14
4.1.5 Pacific Pipeline 4.1-17
4.1.6 Four-Corners Pipeline 4.1-20
4.2 Onshore Water Resources 4.2-1
4.3 Biological Resources 4.3-1
4.4 Air Quality 4.4-1
4.5 Noise 4.5-1
4.6 Visual Resources 4.6-1
4.7 Land Use 4.7-1
4.8 Utilities 4.8-1
4.9 Socioeconomics 4.9-1
4.10 Transportation and Circulation 4.10-1
4.11 Cultural Resources 4.11-1
4.12 System Safety and Reliability 4.12-1

5.0 ENVIRONMENTAL CONSEQUENCES 5.0-1

5.1 Geology, Soils and Seismicity 5.1-1
5.1.1 Cajon Pipeline 5.1-1
5.1.2 Kramer Segment Alternative 5.1-6
5.1.3 Sycamore South Segment Alternative 5.1-7
5.1.4 M-70 Pipeline 5.1-7
5.1.5 Pacific Pipeline 5.1-7
5.1.6 Four-Corners Pipeline 5.1-7
5.1.7 No Project 5.1-7
5.2 Onshore Water Resources 5.2-1
5.3 Biological Resources 5.3-1
5.4 Air Quality 5.4-1
5.5 Noise 5.5-1
5.6 Visual Resources 5.6-1
5.7 Land Use 5.7-1
5.8 Utilities 5.8-1
5.9 Socioeconomics 5.9-1
5.10 Transportation 5.10-1
5.11 Cultural Resources 5.11-1
5.12 System Safety and Reliability 5.12-1
5.13 Cumulative Impacts 5.13-1

6.0 ANALYSIS OF MARKETING ALTERNATIVES 6-1

6.1 Introduction 6-1
6.2 Comparison of Marketing Alternatives 6-1
6.2.1 Geology 6-1
6.2.2 Onshore Water Resources 6-2
6.2.3 Biological Resources 6-2
6.2.4 Air Quality 6-2
6.2.5 Noise 6-3
6.2.6 Visual Resources 6-3
6.2.7 Land Use 6-3
6.2.8 Utilities 6-3
6.2.9 Socioeconomics 6-3
6.2.10 Transportation and Circulation 6-3
6.2.11 Cultural Resources 6-4
6.2.12 System Safety and Reliability 6-4
6.3 Environmentally Superior Alternative 6-4

7.0 CEQA/NEPA CONSIDERATIONS 7-1

7.1 Relationship of Short-Term Uses of the Environment and the Maintenance of Long-term Productivity 7-1
7.2 Significant Irreversible Impacts 7-1
7.3 Growth Inducing Impacts 7-2
7.4 Unavoidable Significant Adverse Impacts Resulting from Project Implementation 7-3
7.5 Mitigation Monitoring Program 7-3

8.0 CONSULTATION AND COORDINATION 8-1

8.1 Public Involvement 8-1
8.2 Persons/Organizations Consulted During EIS/EIR Preparations 8-1
8.3 Coordination with Federal, State, and Local Agencies 8-3
8.4 Relationships to Environmental Protection Statutes and Other Requirements 8-4
8.5 Reviewing Agencies 8-6

9.0 LIST OF PREPARERS 9-1

10.0 ACRONYMS AND ABBREVIATIONS 10-1

11.0 GLOSSARY 11-1

12.0 REFERENCES 12-1

13.0 INDEX 13-1

14.0 APPENDICES

A. Detailed Pipeline Route (Maps 1-26), Including Key Features Along the Pipeline Route
B. Initial Study Checklist and Notice of Preparation
C. Pipeline Specifications

TECHNICAL APPENDICES
I. Biological Evaluation/Biological Assessment
II. Air Emissions Calculations
III. Cultural Resources Report
IV. Paleontological Report
V. Standards and Codes for Pipeline Construction

These technical appendices are available upon request at the following locations:

Bureau of Land Management
California Desert District
6221 Box Springs Blvd.
Riverside, CA 92507

City of Adelanto
City Engineering Department
11600 Air Base Road
Adelanto, CA 92301

LIST OF FIGURES

1-1 General Location . . . 1-2

3-1(A,B) Project Location . . . 3-2
3-2 Longitudinal Profile . . . 3-9
3-3 Right-of-Way Markers . . . 3-8
3-4 Plot Plan of Terminal . . . 3-12
3-5 Plot Plan of Adelanto Station . . . 3-18
3-6 Typical Construction Spread . . . 3-19
3-7 Typical Street Crew . . . 3-21
3-8 Typical Ditch Cross-Section . . . 3-24
3-9 Typical Road Crossing . . . 3-25
3-10 Typical River Crossing . . . 3-26
3-11 Directional Drilling Profile . . . 3-28
3-12 Project Schedule . . . 3-33
3-13 Alternatives . . . 3-39
3-14 Alternative 1: M-70 Pipeline . . . 3-41
3-15 Alternative 2: Pacific Pipeline . . . 3-42
3-16 Alternative 3: Four Corners Line 90 Pipeline . . . 3-37

4.1.1-1 Major Active Fault Zones of Southern California . . . 4.1-3
4.1.1-2 Groundwater Basins . . . 4.1-7
4.3.1-1 Desert Tortoise Estimated Population Density . . . 4.3-13
4.4.1-1 Air Basins of Southern California . . . 4.4-2
4.5.1-1 Land Use Compatibility For Community Noise Environments . . . 4.5-3
4.6.1-1 Pipeline Route Photos . . . 4.6-6
4.6.1-2 Pipeline Route Photos . . . 4.6-7
4.6.1-3 Pipeline Route Photos . . . 4.6-9
4.6.1-4 Pipeline Route Photos . . . 4.6-10
4.6.1-5 Pipeline Route Photos . . . 4.6-11
4.7.1-1 Jurisdictional Boundaries . . . 4.7-8
4.8.1-1 California Desert Conservation Area Plan Utility Corridors . . . 4.8-2

5.12.1-1 Mean Spill Size and Pipe Diameter for Accidents Reported to OPSO, 1971-1975 . . . 5.12-10
5.12.1-2 Fatalities and Injuries vs. Amount of Product Loss In Liquid Pipeline Systems Accidents . . . 5.12-12

LIST OF TABLES

1-1 Safety Statistics for Various Crude Oil Transportation Modes 1-3
1-2 Approval Requirements for the Cajon Proposal 1-7

2-1 Summary Table of Environmental Impacts and Mitigation Measures for the Proposed Project 2-3
2-2 Comparison of Impact for the Alternatives 2-49

3-1 Valve Locations Along the Cajon Pipeline Route 3-6
3-2 Characteristics of Pipeline Alternatives 3-37
3-3 Other Proposed Project Along the Cajon Pipeline Route 3-48

4.1.1-1 Summary of Active Faults (Cajon Pipeline) 4.1-2
4.1.1-2 Characteristics of Soils Along Cajon Pipeline 4.1-8
4.1.1-3 Potential Contaminated Soil Sites for the Proposed Cajon Pipeline Project 4.1.1-10
4.1.4-1 Summary of Significant Faults 4.1-16
4.1.5-1 Summary of Active and Potentially Active Faults 4.1-19
4.1.6-1 Summary of Active and Potentially Active Faults 4.1-21

4.2.1-1 Stream Crossings along Route of Cajon Pipeline 4.2-2
4.2.1-2 Stream Flow Characteristics for Major Stream Crossing by Cajon Pipeline 4.2-3
4.2.5-1 Stream Crossings Along the M-70 Route 4.2-7
4.2.6-1 Perennial Stream Crossings Along the Pacific Pipeline Route 4.2-10

4.3.1-1 Sensitive Plant and Animal Species with the Greatest Potential to Occur Along the Cajon Pipeline Route 4.3-8

4.4.1-1 Federal and State Ambient Air Quality Standards 4.4-6
4.4.1-2 Health Effects Summary of the Major Criteria Pollutants 4.4-7
4.4.1-3 Allowable PSD Increments (μg/m^3) 4.4-9
4.4.1-4 Air Pollutant Data Summary for Southeast Desert Air Basin (1988-1990) 4.4-10
4.4.1-5 Air Pollutant Data Summary for South Coast Air Basin (1988-1990) 4.4-11
4.4.5-1 Summary of Air Quality Data Relevant to the M-70 Pipeline 4.4-14
4.4.6-1 Attainment Status of Air Basin Jurisdictions Traversed by the Pacific Pipeline 4.4-17

4.5.1-1 Typical Noise Levels 4.5-2
4.5.1-2 Average Community Noise Levels 4.5-5
4.5.1-3 On-Site Noise Monitoring 4.5-5
4.5.1-4 Location of Sensitive Noise Receptors 4.5-6
4.5.5-1 Location of Noise Sensitive Receptors along the M-70 Pipeline 4.5.-10
4.5.6-1 Location of Noise Sensitive Receptors along the Pacific Pipeline Route 4.5-11

4.6.1-1 Visual Resource Management Guidelines 4.6-4

4.7.1-1 Land Use Requirements for the Cajon Pipeline 4.7-4

4.8.1-1 Utilities Which Are Adjacent To Or Cross The Cajon Pipeline Route . . . 4.8-3

4.9.1-1 Socioeconomic Profile 4.9-3
4.9.1-2 Socioeconomic Profile - Employment 4.9-4
4.9.1-3 Socioeconomic Profile - Construction Employment 4.9-5
4.9.1-4 Socioeconomic Profile - Population 4.9-6
4.9.1-5 Socioeconomic Profile - Total Housing 4.9-7
4.9.5-1 Los Angeles and Kern County
Employment Annual Averages and Forecast 4.9-8
4.9.5-2 Population for Cities Along the Proposed Route, January 1, 1989 . . . . . . 4.9-9
4.9.6-1 Study Area Population Characteristics 4.9-10
4.9.6-2 Study Area Employment 4.9-11
4.9.6-3 1991 Permanent Housing Units 4.9-12

4.10.1-1 Existing Transportation Facilities 4.10-3
4.10.1-2 Design ADT Volumes for Road Classifications and Level of Service . . . 4.10-8
4.10.1-3 Cajon Pipeline Traffic Impact Study Existing Traffic Conditions 4.10-8
4.10.1-4 Railroad Crossings 4.10-9
4.10.5-1 Existing Transportation Facilities (M-70 Pipeline) 4.10-11
4.10.5-2 Existing Traffic Conditions (M-70 Pipeline) 4.10-14

4.11.1-1 Archaeological Resources Within the Cajon Pipeline Area
of Potential Effect Requiring Additional Investigation 4.11-7
4.11.1-2 Summary of Paleontological Resources along the Cajon Pipeline Route 4.11-12
4.11.5-1 Previously Recorded Sites Near the M-70 Pipeline 4.11-16
4.11.6-1 Cultural Resources within 20 meters
of the Pacific Pipeline Right-of-Way 4.11-19
4.11.6-2 Unrecorded Resources Found During Field Survey
of the Pacific Pipeline 4.11-21

5.2.1-1 Streams Crossed by the Cajon Pipeline and
Associated Valve Locations 5.2-8

5.4.1-1 Cajon Pipeline Project Emissions 5.4-2
5.4.5-1 M-70 Pipeline Daily Emissions per Typical Spread 5.4-6
5.4.6-1 Pacific Pipeline Project Emissions 5.4-7
5.4.6-2 Pacific Pipeline Indirect Project Emissions 5.4-7

5.5.1-1 Typical Construction Equipment Noise (dBA) 5.5-3

5.9.1-1 Construction Employment Profile 5.9-4
5.9.1-2 Personnel 5.9-5
5.9.1-3 Employment Impact 5.9-6
5.9.1-4 Direct, Temporary Population/Public Services Impact 5.9-7
5.9.6-1 Contribution to Tax base for the Proposed Pacific Pipeline 5.9-14

5.11.1-1 Archaeological Resources Within the Cajon Pipeline Area of Potential Effect Requiring Additional Investigation 5.11-5

5.12.1-1 Pipeline Accident Data 5.12-8
5.12.1-2 Land Crude Pipeline Spill Size Distributions 5.12-8
5.12.1-3 Volume Distribution of Onshore Storage 5.12-9
5.12.1-4 Risks of Public Fatalities/Injuries from the Cajon Pipeline 5.12-13

6-1 Qualitative Comparison of Long-Term Environmental Impacts 6-5
6-2 Qualitative Comparison of Short-Term Construction Related Impacts 6-5

EXECUTIVE SUMMARY

THE PROPOSED PROJECT DESCRIPTION

The Cajon Pipeline Company proposes to build a 142-mile long pipeline from 12-Gauge Lake, 27 miles west of Barstow, California, to the Los Angeles crude oil terminals in Carson and Long Beach. The proposed action being requested is the granting of right-of-way (ROW) to the Cajon Pipeline Company by the Bureau of Land Management (BLM) under Section 28 of the Mineral Leasing Act 1920 as amended (30 U.S.C. 185). The 20-inch diameter, insulated, and buried pipeline would transport heavy crude oil from the Santa Barbara Channel and the San Joaquin Valley to the Los Angeles Basin. Two pump stations would be needed to transport heated crude oil through the pipeline. One pump station, together with storage, would be located at 12-Gauge Lake. The other pump station, together with control and maintenance facilities, would be located at Adelanto.

Crude oil from the Santa Barbara Channel and the San Joaquin Valley would be delivered to 12-Gauge Lake by the existing All-American Pipeline (AAPL). From there it would be transported to the Los Angeles Basin by the proposed Cajon Pipeline. The Cajon Pipeline would have a maximum capacity of 180,000 barrels per day (BPD), but is designed to operate at an average flow of 150,000 BPD.

Pipeline and Appurtenances

The pipeline would consist of 142 miles of buried, insulated, steel-welded pipe extending from 12-Gauge Lake to Carson. For most of the route, the pipeline would be within or adjacent to existing public or private rights-of-way. Beginning at the storage area at 12-Gauge Lake, the pipeline route would extend west parallel to the State Route 58 (SR-58) and then south along U.S. Route 395 (U.S. 395) to the City of Adelanto. The route would continue south along Baldy Mesa Road to Valencia Street where it would go west to Beaver Street and continue south on Beaver Street to Yucca Drive. At Yucca Terrace Drive it would turn east to Baldy Mesa Road, and then continue south. It would continue south along Baldy Mesa Road through Cajon Pass, crossing under Interstate 15 (I-15) at two locations and continuing south along Old Cajon Boulevard to the separation of I-15 and Interstate 215 (I-215). It would cross Highway 10 east of Ontario Airport to Mission Boulevard. It would then follow Mission Boulevard northwest to State Street and continue on First Street to Vernon and Pomona Boulevard to the City of Industry. In the City of Industry it would follow various streets to the San Jose Flood Control Channel. Following the channel, it would cross Interstate 605 (I-605) and the San Gabriel River and then along the San Gabriel River it would cross State Route 60 (SR-60). The route would follow various streets, crossing Rosemead Boulevard (State Route 19), and passing around the Whittier Narrows Dam. The route would follow flood control channel access roads along the Rio Hondo Channel and the Los Angeles River to just north of Interstate 405 (I-405) at which point it would follow the Union Pacific Railway right-of-way to the westside of the Long Beach Freeway (I-710) southerly to Carson Street. The route would proceed along Carson Street to Alameda Boulevard. The route would then turn south along Alameda Boulevard to the Dominguez Channel and would continue along the channel to the GATX Carson Terminal.

A pressure reduction station is necessary to reduce the pressure induced by the descent of the pipeline through the Cajon Pass. The Sycamore Canyon Pressure Reduction Station would be located on the west side of Interstate 15 at M.P. 73.0. The fenced site will be 150 feet by 80 feet containing a receiving and launching trap along with a control valve and a control facility. Foundations would be required and the site would be lighted. The height of all facilities would be less than 10 feet. Electricity would be provided to the site by Southern California Edison.

The pipeline would cross 23 streams or canals, the largest being the California Aqueduct, Cajon Wash, and the Los Angeles River. Stream crossings are listed in Section 4.2. The pipeline would lie within or cross numerous streets, highways, and railroad tracks. The pipeline's relationship to these transportation facilities is described in detail in Section 4.10.

The pipeline would be protected from corrosion by a cathodic protection system whereby an electrical current is impressed through the pipe to counteract the electrical currents created when the metal surface contacts the ground. Corrosion protection test stations would be located at approximately five mile intervals along the pipeline route.

The pipeline would be equipped with 46 valves with a maximum separation of 6.7 miles. Valve locations are listed in Table 3-1. It includes 36 main line valves (gate or block valves) which prevent the flow of oil in either direction when activated, and ten check valves to prevent the reverse flow of oil. Check valves automatically prevent backflow whereas gate valves may be remotely or manually operated.

The pipeline would lie within a permanent right-of-way varying in width between 10 and 50 feet. The permanent right-of-way would be narrower in congested urban areas and wider in undeveloped areas. Right-of-way markers would be installed along the pipeline route in accordance with U.S. Department of Transportation regulations.

Cajon Terminal

Cajon Terminal would be located adjacent to the All-American Pipeline 12-Gauge Lake Heater Station site and would consist of a 3,000 brake horse power (BHP) pump station and a 750,000 barrel crude oil storage area. The terminal would occupy 25 acres of land which includes 2.5 acres for the pump station, and the remainder for crude storage.

The pump station would consist of three electric pumps, mounted on concrete pads, a control building, and an electrical substation. The control building would house the electrical switchgear required to control the electrical substation and the pump motors. It would also house motor control equipment for station

valves and other control and communication equipment. The control building would be approximately 40 feet long, 10 feet wide and 10 feet high.
The storage area would consist of five insulated, steel, double-sealed, floating roof tanks. Each tank would have a capacity of 150,000 barrels and would be 48 feet high and 153 feet in diameter. The tanks would be built on compacted earthen pads over an impermeable barrier. The tanks would be surrounded by an approximately six foot high dike which would be capable of containing 125% of the maximum volume of all tanks in the event of failure. The area within the dike would be graded to drain to a catchbasin equipped with a gate valve. The entire terminal site would be leveled, compacted, graveled, and fenced. A 50-foot by 100-foot terminal office/lab/warehouse building would be built along with a helicopter pad.

Adelanto Pump Station and Maintenance Center

The Adelanto Pump Station would occupy an approximately 2.2-acre site in the City of Adelanto. Facilities at the pump station would include a 3,000 BHP booster pump station, offices, an office/warehouse, and a control center. The pump station would consist of three electric pumps, mounted on concrete pads, an electrical substation, and a control center. The control center would be housed, together with an office and warehouse in a single 5,000-square foot building. The site would be leveled, compacted, and graveled. A fence would surround the entire site.

Project Operations

Before construction of the Cajon Pipeline would begin, a Construction/Operation/Maintenance Plan (COM Plan) would be prepared. The COM Plan is to develop and implement applicable provisions and mitigating measures agreed upon during and after the NEPA/CEQA process.

The Cajon Pipeline project, comprised of 142 miles of pipeline, storage at 12-Gauge Lake and the two pump stations, would be operated from a main control center in Adelanto. No staff would be maintained at Cajon Terminal. System components are designed to be operated remotely from Adelanto. Remote operation would be accomplished by a SCADA system. The master terminal of the system would be located in Adelanto. The SCADA system would be equipped with software that is programmed to the pipeline design. The system would automatically scan for and receive operating data from remote terminal units at the Cajon Terminal, Adelanto Station, the pressure reduction station and the GATX and Hynes terminals. Although the system could shutdown automatically, all operating decisions would be made by the operator on duty using data from SCADA.

Maintenance centers would be located at Adelanto and at the Cajon Terminal. Maintenance crews assigned to the Adelanto Pump Station would conduct all required routine inspections, maintenance, and emergency repairs. Monitoring procedures to be used by Cajon include aerial pipeline patrol, line rider patrol, corrosion monitoring (cathodic protection), monthly testing of all station and terminal protective devices and inspection of all mainline valves every six months and continuous volume measurement using the SCADA system.

The pipeline would be equipped with instrumentation that would allow early detection of a leak. Pipeline pressure and flow rate and the volumes of oil entering and leaving the system would all be monitored continuously. Warning of a leak would be provided by pressure deviation, flow rate deviation and/or volumetric imbalance. All three of these indicators are effective in providing rapid warning of a large leak. Monitoring of the volume entering and leaving the system is the most effective method for detecting small leaks. Volume balance and pressure variation detection systems currently in use are designed to detect a 150 to 200 barrel per hour (BPH) loss; i.e., approximately 3.35% of total flow capacity within a 150 to 180 second time frame. Smaller losses in the range of 3 to 5 BPH would be detected within a twelve hour time frame. A major rupture would be detected within 15 seconds.

Oil Spill Contingency Plan

Prior to operation, the Cajon Pipeline Company will prepare an Oil Spill Contingency Plan (OSC Plan) pursuant to the U.S. Environmental Protection Agency's Oil Pollution Prevention Regulation, Title 40, Article 112. The OSC Plan outlines the equipment and operational procedures utilized by the spill response teams in preventing, reporting, and containing oil spills and the subsequent restoration activities which may be required.

Construction Schedule

Prior to construction, the major activities associated with the project would include the granting of the ROW, acquisition for the pipeline, surveying, permit acquisition, and franchise authorization where necessary. Excavation and encroachment permits would be obtained, as required, for crossing railroads, highways, streets, rivers, aqueducts, flood control channels, and various other facilities.

Construction is expected to occur over a 12 month period. Construction would progress in urban areas at an average rate of 0.25 miles per spread per day, and in rural areas at an average rate of 1.5 miles per day. Two to three days would be required to cross a roadway intersection by either boring or trenching.

The expected duration of construction at any one location is no more than 5 days, except for construction of the terminal and stations. Construction activities would typically occur between the hours of 6:00 a.m. and 5:00 p.m. on weekdays and between 8:00 am and 6:00 pm on Saturday and Sunday, except where city staffs have requested otherwise to alleviate traffic impacts or where local noise ordinances limit the hours of allowable construction activities. Nighttime construction would be performed in commercial areas where requested by agency personnel.

PURPOSE AND NEED FOR THE PROJECT

Virtually all of Southern California's oil refining capacity is located in the Los Angeles Basin. Over 90 percent of the gasoline consumed in the Los Angeles area is produced by local refineries. Crude oil is delivered to the refineries from foreign sources, from oil fields in Alaska and from crude oil producers in California. Foreign and Alaskan crude is transported to the refineries by marine tanker. Oil from local sources is delivered to the refineries by pipeline and, to a lesser extent, by rail.

Approximately 30 percent of the crude oil now being refined in the Los Angeles Basin comes from Alaska. Production volume from Alaska is expected to decline by more than 50 percent by the year 2000. To replace the Alaska crude, Los Angeles refineries must increase their crude supply from other domestic or foreign sources. Domestic sources that could meet the refining demand are Santa Barbara Channel Outer Continental Shelf production and Steam Flood Fields in the San Joaquin Valley. San Joaquin Valley production is expected to increase due to the availability of gas for steam generation being supplied by the recently completed Mojave Gas Line, (up to 30,000 BPD of heavy crude will be displaced by conversion to gas for steam generation). Both the Outer Continental Shelf and San Joaquin Valley produce heavy crude that must be heated or blended to move in a pipeline. Currently there is limited means for transport from existing pipelines to the Los Angeles refineries.

The Cajon Pipeline proposal is based on the need to transport heavy crude oil in a neat state (unblended) from both the San Joaquin Valley (SJV) and the outer continental shelf (OCS) to the Southern California refineries. The Cajon Pipeline responds to this demand with a regional approach, by offering SJV and OCS oil producers a pipeline to transport oil to the Southern California refineries.

The need for the Cajon Pipeline is also based on the steady decline in the rate of San Joaquin Valley (SJV) light crude oil production, a portion of which is currently used to blend heavy SJV crude to the point that it can be shipped in unheated pipelines to Los Angeles and the Gulf Coast. Estimates vary, but there is a general agreement throughout the industry that light oil production will decline over the next five years to the point that SJV heavy oil producers will experience difficulty in obtaining light oil blendstocks that enable them to utilize unheated pipelines. At that point it will become increasingly important that a new heated pipeline be operational as an alternative to blending light and heavy crude oils and transporting via an existing, unheated pipeline.

Crude oil from the Santa Barbara Channel and the San Joaquin Valley can be transported to Los Angeles by pipeline, tanker truck, rail, or marine tanker. Pipeline transport is generally considered to be the most satisfactory transportation mode because it poses the least threat to public safety and the environment. Table 1-1 provides comparative information on accident frequency for the different crude oil transportation modes. Furthermore, only limited use of marine tankers from the Santa Barbara Channel has been permitted by the California Coastal Commission and only after firm throughput and deficiency agreements are signed with a pipeline developer. This permit would allow interim tankering until a pipeline was constructed and operational to the Los Angeles Basin.

The Cajon Pipeline is one of three proposals for pipelines connecting the Los Angeles refineries with crude oil sources. Other proposals that may proceed include the Pacific Pipeline and the Four Corners Line 90 Pipeline. One or more of these proposed pipelines would be needed to supply the Los Angeles basin with crude oil from the Santa Barbara Channel and the San Joaquin Valley.

ALTERNATIVES

The CEQA and NEPA process requires the identification and assessment of reasonable alternatives that have the potential for avoiding or minimizing the impacts of the proposed project. A comparative analysis of technically feasible alternatives which can achieve the same objective as the proposed project is important in the decision-making process.

Several alternatives to the Cajon Pipeline are discussed in detail in the EIS/EIR. In the process of selecting the proposed Cajon Pipeline route a number of other alternative routes were investigated. An initial screening analysis dismissed routes with little or no potential for offering reasonable environmental advantages. This EIS/EIR contains a detailed analysis of the following alternatives. Table 2-2 (see Chapter 2), summarizes the impacts of the Cajon Pipeline and the following four alternatives.

- **Kramer Segment Alternative.** This route alternative proceeds south from 12-Gauge Lake and then in a southwesterly direction through undisturbed BLM lands, to an intersection with the existing BLM utility corridor, located parallel to U.S. 395. The alternative route then follows the Cajon Pipeline route along the remaining alignment to Carson. The entire route utilizing the Kramer Segment Alternative is 130 miles in length.

- **Sycamore South Segment Alternative.** The Sycamore Segment Alternative follows the Cajon Pipeline route to west of the Cajon Wash (M.P. 73), where it would cross I-15 and follow the alignment of two existing natural gas transmission lines, which pass through Glen Helen Regional Park. The alternative would then, again, cross the freeway west of Lytle Creek and match the proposed alignment at approximately M.P. 74 and continue along the same alignment to Carson. The entire route utilizing the Sycamore South Segment Alternative is 143 miles in length.

- **No Project Alternative.** Under the No Project alternative, construction of the Cajon Pipeline would not occur. For the purposes of the alternative analysis within this EIS/EIR, the most likely scenario in the case of the No Project alternative for transportation of crude oil from Santa Barbara and the San Joaquin Valley to refinery facilities would be via the AAPL to the Gulf Coast or via the AAPL in conjunction with the Four Corners Line 63 and Texaco pipeline to San Francisco. However, excess refinery capacity would still be available in Los Angeles. This capacity would be filled by increased tankering of crude oil from foreign sources.

PROJECT ALTERNATIVES AND ROUTE VARIATIONS CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

In arriving at the proposed route the Cajon Pipeline Company conducted a selection process which assessed a number of alternative routes for pipeline construction. Two major route variations were proposed for the northern route from 12-Gauge Lake to Cajon Pass and from Pomona to Whittier Narrows (Alternatives #1 and #2). The preferred route was then selected from this initial feasibility analysis. Once analysis of the pipeline route was undertaken, two further areas of sensitivity were identified: the route crossing of Interstate 15 (I-15) at Crowder Canyon (Variation #1), and Whittier Narrows (Variations #2).

Routing Alternative #1

The original alignment proposed for the Cajon Pipeline was a direct route from the 12-Gauge Lake Heater Station south, parallel to Helendale Road to Silver Lakes, and then directly south to Cajon Pass. This route is shorter than the preferred route but is much closer to the Mojave River. At Silver Lakes, the majority of the flow in the Mojave River is underground. In the event of a crude oil spill from the pipeline, contamination of a public water supply could occur if the oil spill plume reached the Mojave River. Due to the sensitivity of this resource, the route close to the Mojave River was rejected.

Routing Alternative #2

Various routes from Pomona to Whittier Narrows were considered. Consideration was given to using Mission Boulevard and Philadelphia Street. These routes were rejected due to the large volumes of traffic which use these major thoroughfares. A route crossing the Chino and Puente hills in undeveloped lands was analyzed. However, the clearing and grading of undeveloped areas are considered more significant than undertaking construction in urban areas. This alternative was rejected due to the sensitive nature of the hills.

Routing Variation #1

The proposed route originally intended to bore beneath I-15 and emerge adjacent to the stream of Crowder Creek. Due to Forest Service concerns, further discussion was undertaken with Caltrans and a more acute angle of directional drilling was assessed to avoid outletting within the stream area. At the same time, consideration was also given to remaining on the eastern side of I-15 and trenching or boring through a steep slope to Cleghorn Canyon and thus avoiding crossing I-15 at this sensitive location (Map Sheet 10). This variation was rejected due to the steepness and instability of the slope and the potential problems for revegetation and stabilization following construction.

Routing Variation #2

The proposed route utilizes the right-of-way of Durfee Road through the Whittier Narrows Recreation Area. Due to initial concern for impacts to wildlife in the area, another potential route was investigated. This involved circumventing the Whittier Narrows Dam by Peck Road, Gallantini Street, and Paramount Boulevard. This route variation was rejected due to the high traffic volumes on Paramount Boulevard, the significant traffic impacts which would occur during construction, and the significant construction impacts to the surrounding residential neighborhoods.

MARKETING ALTERNATIVES

The objective of the proposed Cajon Pipeline is to transport up to 180,000 BPD of crude oil from the Santa Barbara Channel and the San Joaquin Valley to refineries in the Los Angeles Basin. Alternatives that would partially or completely achieve the same objective as the Cajon Pipeline include other new or modified pipelines or alternative transport methods, such as tanker truck or rail. This EIS/EIR contains a detailed analysis of the following alternatives.

- **M-70 Pipeline.** The existing M-70 Pipeline from Lebec in Kern County to Torrance in the Los Angeles Basin would be replaced by a new pipeline following primarily the same route. The M-70 Pipeline project could provide an increase in crude oil transport capacity of about 32,000 BPD to a total capacity of 95,000 BPD; an increase equivalent to only about one-sixth the capacity of the proposed project. There is no current proposal to provide service to OCS and SJV shippers.

- **Pacific Pipeline.** The Pacific Pipeline would extend from Gaviota in Santa Barbara County to the Los Angeles refinery complex. The Pacific Pipeline would have a capacity of 130,000 BPD and would deliver crude oil from the Santa Barbara Channel only. Additional construction would be required to transport crude from the San Joaquin Valley to Santa Barbara.

- **Four Corners Line 90.** The existing Four Corners Line 90 extends from a terminal in the Los Angeles Basin to Cadiz in San Bernardino County. With the addition of four pump stations and three heater stations, along with changes to the existing piping, flow in the line could be reversed. Crude oil would be transported to Cadiz by the All-American Pipeline and then transported to Los Angeles by Line 90. Capacity of the line would be 100,000 BPD.

COMPARISON OF MARKETING ALTERNATIVES

The environmental impacts of the marketing alternatives are compared. Each environmental element is discussed separately.

Geology

Geologic hazards that could affect the structural integrity of the alternatives and cause a spill of crude oil are the primary concern. All transportation modes would exist in a seismically-active and landslide-prone region of California. All four pipelines would have to cross active faults, which are defined as faults that have exhibited movement within the last 11,000 years. The potential effects of displacements on faults on the three proposed pipelines could be mitigated by incorporating design features that can accommodate some movement. Spills from an earthquake-induced pipeline failure would be limited by valving in the line and continuously-monitored leak detection systems. The potential effects of the geologic hazards could also be greatly reduced by the incorporation of appropriate design features. Because the Four Corners Line 90 alternative would utilize 185 miles of existing pipeline, it would incorporate fewer features designed to minimize geologic hazards. This assumes that no mainline construction activity is required, such as any coating, lowering, replacement or re-burial of pipe.

In conclusion, no alternative offers a significant advantage over any other with respect to geologic impacts or invulnerability to geologic hazard. All alternatives involve some potential impacts but they are already modest or can be mitigated to a level of insignificance.

Onshore Water Resources

Onshore water resources could be adversely affected by construction of the alternatives. Long-term effects on water resources are limited to those associated with spills. Because the adverse effects of spills primarily affect biological resources they are discussed in the next section.

Construction of the M-70, Pacific and Cajon pipelines could temporarily affect water quality and hydrology because all must pass under or over a number of natural waterways. All crossings that disturb the bed of the waterway would be the subject of Stream Alteration Agreements with the Department of Fish and Game. The agreements would include measures designed to minimize impacts on water quality such as limiting construction to dry periods, requiring revegetation and requiring erosion control.

The Four Corners Line 90 reversal alternative would involve major construction at the pump stations and heater sites. This alternative would not be expected to have a significant adverse effect on water resources, unless lowering of pipe or re-burial is required for washes and streams.

Biological Resources

Construction of the M-70, Four Corners Line 90 reversal alternative, Pacific and Cajon pipelines would temporarily disrupt biological resources. Construction of the Four Corners Line 90 would have some effect on biological resources. Sensitive habitats that could not be avoided such as wetland and riparian vegetation in the vicinity of waterways, would be restored or compensated for. The effects on sensitive species such as the desert tortoise and Mojave ground squirrel would be reduced to insignificant by mitigation.

All alternatives would pose a threat to biological resources in the event of an oil spill. The potential for environmental damage would be greatest where pipelines, railroads or highways cross waterways. This is because the most sensitive habitats are often located at or near waterways and because spilled oil could be spread rapidly by surface waters. Of the four pipelines evaluated in this EIS/EIR the Pacific Pipeline has the most potential for harming biological resources in the event of a spill because of its close proximity to the ocean for 62 miles, and because it crosses 157 watercourses at or near their estuaries.

Air Quality

Operation of the majority of pipeline alternatives would result in few air pollutant emissions. Emissions would be limited to fugitive emissions from tanks and valves, and to emissions from heaters. Construction of the pipeline alternatives would also produce air pollutant emissions for the period of construction. The M-70, Cajon and Pacific pipeline alternatives would generate the most air pollutant emissions during construction due to pipeline length. However, for operation, the Four Corners Pipeline would result in the greatest emissions from newly constructed heater stations.

Noise

None of the pipeline alternatives would generate significant noise or adversely affect any sensitive receptors as a result of pipeline operations. Noise from construction would be associated with all alternatives although it would be greatest for the M-70, Cajon and Pacific pipelines. While largely unavoidable, construction noise was judged to be insignificant because of its temporary nature.

Visual Resources

Once built, the pipeline alternatives would offer little visual evidence of their existence except at the pump stations and other associated facilities. For the most part the alternatives follow existing rights-of-way which have already been subject to disturbance. In undeveloped areas, ground disturbed as a result of construction would be regraded and revegetated so that it would gradually return to its original appearance. Impacts would be the greatest in steep sloping areas where the pipeline right-of-way can be seen from distant vantage points. The Cajon Pipeline would pass through the visually sensitive Cajon Pass area in the San Bernardino National Forest. The M-70 Pipeline would pass through the Pyramid Lake area in the Angeles National Forest. The Pacific Pipeline would have the least visual impact because, although it passes through visually sensitive areas, it would lie within an already developed railroad right-of-way.

Land Use

The Cajon, M-70 and Pacific pipeline alternatives would involve the conversion of narrow strips of land from various existing uses to use for crude oil transport. In many cases the land involved is already used as right-of-way for highways, streets, railroads and utilities. Pump stations and storage areas would also involve conversion of land uses. In general, none of the alternatives would have significant impacts on land use.

Utilities

Pipeline construction for Cajon, M-70, and Pacific pipelines would result in similar construction impacts to utilities and potential utility disruption. Construction impacts of Four Corners Pipeline would be limited to new facilities locations (assuming no mainline construction work will be necessary). The collocation danger for the Cajon and M-70 Pipeline would be similar with a concentration of utilities in a restricted geographical area.

Socioeconomics

All alternatives would create small numbers of permanent jobs. The Cajon, M-70 and Pacific pipelines alternatives would generate several hundred short-term construction jobs. None of the alternatives would have significant socioeconomic impacts.

Transportation and Circulation

The construction process for the three pipeline alternatives would temporarily disrupt traffic. Because construction would proceed rapidly, and major highway crossings would be built by boring under the highways, the impacts on traffic were judged to be less than significant after mitigation. Four Corners Line 90 Pipeline with construction limited to several locations would have insignificant impacts on traffic.

Cultural Resources

The three alternatives involving pipeline construction could all adversely affect cultural resources. It is expected, however, that the effects would either be insignificant, could be mitigated to a level of insignificance, or in cases of important finds, could be avoided.

System Safety and Reliability

Spill risk for pipelines depends on the length and age of the pipeline, pipe material, standard of construction and many other factors. Because the Cajon, M-70 and Pacific pipelines (except for the use of the Mobil line M-143) would be new, they would all experience about the same spill risk per mile. Spill risk per mile for the existing Four Corners Line 90 would be about five times that for a new pipeline. Overall spill risk for the Cajon Pipeline would be less than for the M-70 and Pacific pipelines because of the use of older pipeline segments in the system.

1.0

Introduction

1. INTRODUCTION

1.1 THE PROPOSED PROJECT

The Cajon Pipeline Company proposes to build a 142-mile long pipeline from 12-Gauge Lake, 27 miles west of Barstow, California, to the Los Angeles crude oil terminals in Carson and Long Beach. The proposed action being requested is the granting of right-of-way (ROW) to the Cajon Pipeline Company by the Bureau of Land Management (BLM) under Section 28 of the Mineral Leasing Act 1920 as amended (30 U.S.C. 185). The 20-inch diameter, insulated, and buried pipeline would transport heavy crude oil from the Santa Barbara Channel and the San Joaquin Valley to the Los Angeles Basin. Two pump stations would be needed to transport heated crude oil through the pipeline. One pump station, together with storage, would be located at 12-Gauge Lake. The other pump station, together with control and maintenance facilities, would be located at Adelanto. The general location of components of the proposed project are shown in Figure 1-1.

Crude oil from the Santa Barbara Channel and the San Joaquin Valley would be delivered to 12-Gauge Lake by the existing All-American Pipeline. From there it would be transported to the Los Angeles Basin by the proposed Cajon Pipeline. The Cajon Pipeline would have a maximum capacity of 180,000 barrels per day (BPD), but is designed to operate at an average flow of 150,000 BPD.

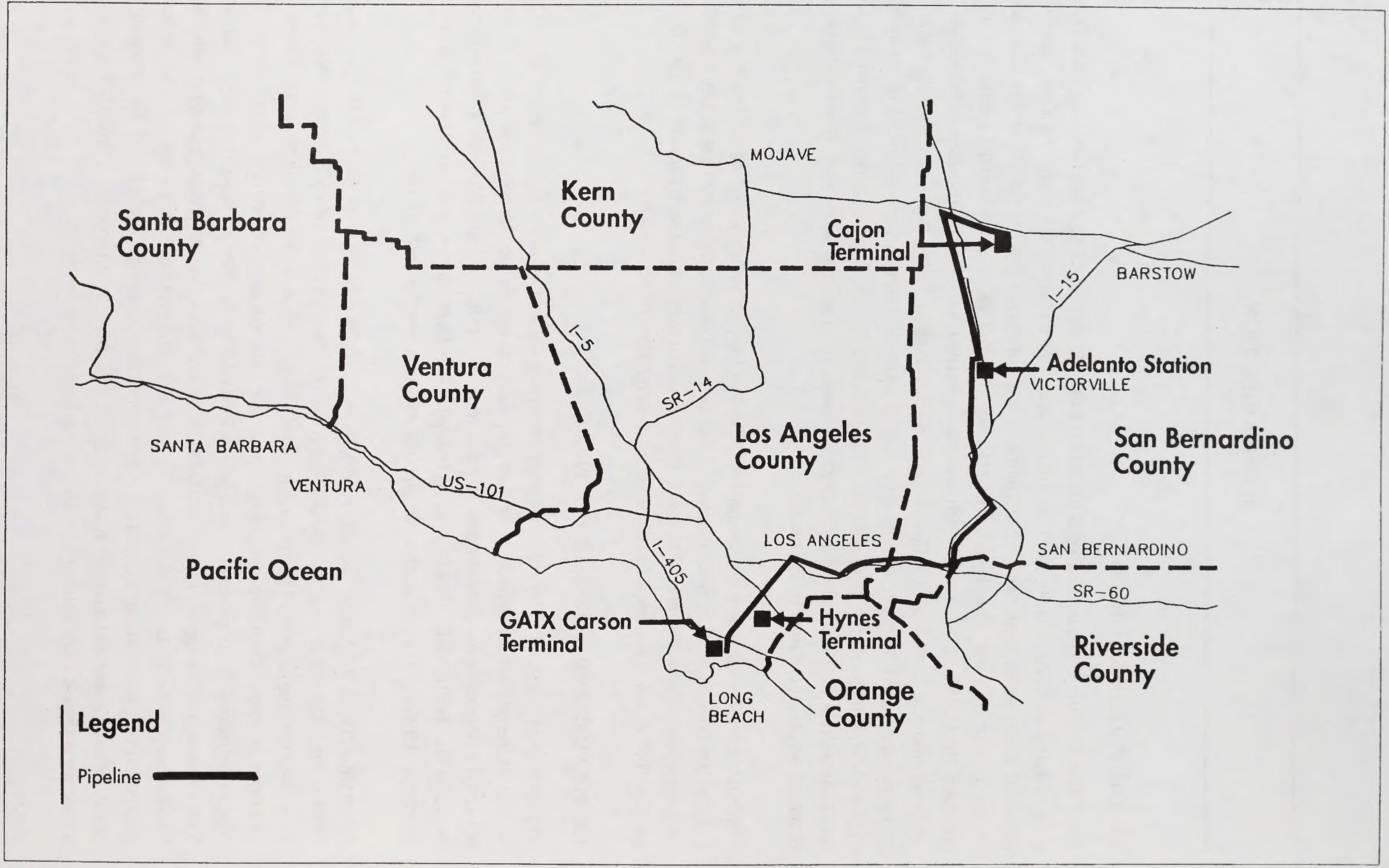
1.2 PURPOSE AND NEED FOR THE PROJECT

Virtually all of Southern California's oil refining capacity is located in the Los Angeles Basin. Over 90 percent of the gasoline consumed in the Los Angeles area is produced by local refineries. Crude oil is delivered to the refineries from foreign sources, from oil fields in Alaska and from crude oil producers in California. Foreign and Alaskan crude is transported to the refineries by marine tanker. Oil from local sources is delivered to the refineries by pipeline and, to a lesser extent, by rail.

Approximately 30 percent of the crude oil now being refined in the Los Angeles Basin comes from Alaska. Production volume from Alaska is expected to decline by more than 50 percent by the year 2000. To replace the Alaska crude, Los Angeles refineries must increase their crude supply from other domestic or foreign sources. Domestic sources that could meet the refining demand are Santa Barbara Channel Outer Continental Shelf production and Steam Flood Fields in the San Joaquin Valley. San Joaquin Valley production is expected to increase due to the availability of gas for steam generation being supplied by the recently completed Mojave Gas Line, (up to 30,000 BPD of heavy crude will be displaced by conversion to gas for steam generation). Both the Outer Continental Shelf and San Joaquin Valley produce heavy crude that must be heated or blended to move in a pipeline. Currently there is limited means for transport from existing pipelines to the Los Angeles refineries.

General Location

Figure 1-1



No Scale

Source: Cajon Pipeline Co. LTD, 1990

eip 90439

The Cajon Pipeline proposal is based on the need to transport heavy crude oil in a neat state (unblended) from both the San Joaquin Valley (SJV) and the outer continental shelf (OCS) to the Southern California refineries. The Cajon Pipeline responds to this demand with a regional approach, by offering SJV and OCS oil producers with a pipeline to transport oil to the Southern California refineries.

The need for the Cajon Pipeline is also based on the steady decline in the rate of San Joaquin Valley (SJV) light crude oil production, a portion of which is currently used to blend heavy SJV crude to the point that it can be shipped in unheated pipelines to Los Angeles and the Gulf Coast. Estimates vary, but there is a general agreement throughout the industry that light oil production will decline over the next five years to the point that SJV heavy oil producers will experience difficulty in obtaining light oil blendstocks that enable them to utilize unheated pipelines. At that point it will become increasingly important that a new heated pipeline be operational as an alternative to blending light and heavy crude oils and transporting via an existing, unheated pipeline.

Crude oil from the Santa Barbara Channel and the San Joaquin Valley can be transported to Los Angeles by pipeline, tanker truck, rail, or marine tanker. Pipeline transport is generally considered to be the most satisfactory transportation mode because it poses the least threat to public safety and the environment. Table 1-1 provides comparative information on accident frequency for the different crude oil transportation modes. Furthermore, the use of marine tankers from the Santa Barbara Channel has been permitted by California Coastal Commission, for only a limited time period, and only after firm throughput and deficiency agreements are signed with a pipeline developer. This shipper's permit would allow interim tankering until a pipeline was constructed and operational to the Los Angeles Basin.

The Cajon Pipeline is one of several proposals for pipelines connecting the Los Angeles refineries with crude oil sources. Other proposals that may proceed include the Pacific Pipeline, the M-70 Pipeline and the Four Corners Line 90 Pipeline. One or more of these proposed pipelines would be needed to supply the Los Angeles basin with crude oil from the Santa Barbara Channel and the San Joaquin Valley.

TABLE 1-1
Safety Statistics For Various Crude Oil Transportation Modes

Mode	Spills/ Billion-Ton Miles[1]	Volume Spilled/ Billion-Ton Miles (Million Gallons)[1]	Deaths/ Billion-Ton Miles[2]
Pipeline	0.48	1.0	0.011
Marine Tanker	9.37	0.02	0.310
Rail Tanker	7.8	0.15	2.5
Truck	44.6	0.14	10.9

[1] Source: Walter, R. et al. 1985. An analysis of oil spills during transport. Proceedings 1985 Oil Spill Conference

[2] Source: National Transportation Safety Board, 1971.

1.3 RELATIONSHIP TO POLICIES, PLANS, AND PROGRAMS

Federal Policies, Plans and Programs

Construction on public lands under BLM's jurisdiction must conform to the policies in the California Desert Conservation Area (CDCA) Plan (1980). The Cajon Pipeline route on Federal lands is within the designated utility planning corridors (G and P), and therefore conforms with the CDCA Plan. The goal of the Desert Plan is to provide for the use of the public lands and resources of the California Desert Conservation Area, including economic, educational, scientific, and recreational uses, in a manner which does not diminish the environmental, cultural, and aesthetic values of the desert and its future productivity.

This goal is to be achieved through management actions and conflict resolution as described in guidelines for four designated geographic multiple-use classes (MUC). Each MUC describes a different type and level or degree of use which is permitted within that particular geographic area. These are described fully within Section 4.7, Land Use.

The Cajon Terminal is located within an area designated for multiple-use (Class M). Under a Class M designation, new utility transmission facilities may be allowed only within designated corridors. The Cajon Terminal is consistent with the Class M guidelines. The remaining portion of the route is proposed wholly within designated utility corridors.

Within the Desert Plan are 12 elements, each providing a desert-wide perspective of the planning decisions for one major resource or issue, as well as providing specific application or interpretation of MUC guidelines. The Energy Production and Utility Corridor Element of the Plan applies to utility-related issues. This element has also identified utility planning corridors as a guide to planning and environmental assessment. Though the proposal conforms with the CDCA Plan, the proposal must be analyzed for environmental impacts in accordance with NEPA (see section 1.4).

The San Bernardino National Forest Land and Resource Plan has designated Cajon Pass as a utility corridor. Under this designation there are three possible management directions:

1. Confine the Cajon Utility Corridor to its present location and utilize the corridor to the maximum extent possible. Upgrading and enlargement of existing facilities would be preferred to construction of new facilities that may further congest the corridor.

2. New transportation and utility facilities would be located adjacent to existing utilities whenever possible to minimize impacts on other resources.

3. Designate additional transportation and utility corridors only if the need arises. Corridors would conform to regional guidelines.

The Federal Energy Regulatory Commission is identified as a Federal authorizing agency. The issue of regulatory jurisdiction over crude oil pipeline in the Outer Continental Shelf of California is pending a decision before the California Public Utility Commission, in connection with the ongoing Pacific Pipeline Systems, Inc's Environmental Impact Report.

Non-Federal Policies, Plans and Programs

The California Public Utility Commission is identified as a State of California authorizing agency for public utility purposes on the basis of it's letter to BLM dated December 20, 1992. The proposed project is subject to compliance with regulations and conformance with policies identified in local plans of affected jurisdictions. The majority of the pipeline route south of M.P. 36 is in privately held lands. The pipeline from M.P. 36 to M.P. 47 is within a designated utility corridors of local jurisdictions. From M.P. 47 to M.P. 73, it is within USFS designated utility corridors. For the remainder of the route, it is within public right-of-ways. In most cases, construction for this type of use is subject only to routine review. However, in some cities, encroachment permits for construction across public rights-of-way are discretionary actions, subjected to city council review. (See a list of requirements by jurisdiction in Table 4.7.1-1.)

1.4 ENVIRONMENTAL REVIEW

Before the Cajon Pipeline project can be approved, the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) must be satisfied. The goal of both legislative acts is to ensure that state and federal decision makers are aware of the environmental consequences of a decision before it is taken. The lead agency for NEPA compliance is the Bureau of Land Management. The lead agency for CEQA compliance is the City of Adelanto.

One of the first steps in the environmental process was to publish a Notice of Intent in the Federal Register on July 24, 1991. The notice provided a brief description of the proposed project and invited public comment on issues to be addressed in the environmental document. Scoping meetings were held on August 13, 14 and 15, 1991 in Pomona, Carson and Adelanto to receive comments verbally.

A Notice of Preparation, the CEQA equivalent of the Notice of Intent, was prepared and circulated by the City of Adelanto on July 1, 1991 (Appendix B). The notice included a project description, a preliminary list of issues to be addressed and a discussion of the purpose and intended use of the EIS/EIR. Notification of the public scoping meetings was also included.

The Draft EIS/EIR was made available for 60 days for public review and comment. Following the public review period, the lead agencies have compiled and responded to all comments received on the Draft EIS/EIR, including verbal comments received at hearing held December 2 and 3, 1992 in Pomona, Carson and Adelanto. A Final EIS/EIR has been prepared incorporating the comments and responses. The City of Adelanto will certify that the Final EIS/EIR meets all CEQA requirements. State and local decision makers will then make their decisions with respect to permit issuance, in part on the basis of information contained in the certified EIR/EIS.

After the Final EIS/EIR 30-day review period is complete, the California State Director of the BLM will issue a Record of Decision (ROD). If the project proceeds, the BLM will act by granting a Right-of-Way across all federal lands. Administrative review of a ROW Grant is subject to an appeal for 30 days.

Table 1.2 lists permits that must be obtained before project construction can commence.

1.5 CONTENT OF THE EIS/EIR

The content of environmental documents is specified by NEPA and CEQA, and in guidelines promulgated by agencies responsible for EIS and EIR preparation. In general, a joint EIS/EIR must contain a description of the environment that would be affected by a proposed project and an assessment of environmental impacts attributable to the proposed project. A judgement must be made with respect to the significance of any adverse environmental impacts. If these impacts are judged to be significant, then mitigation measures that would eliminate or lessen the impacts must be devised. Reasonable alternatives to the proposed project, including "No Project Alternative," must be described.

The content of EIRs and EISs is similar but not identical. The principal difference is the treatment of alternatives. NEPA requires that an EIS include an analysis of several alternatives at an approximately equal level of detail. CEQA initially allowed an EIR to focus on a particular proposal without an elaborate analysis of alternatives. As case law accumulates, CEQA requirements for analysis of alternatives are becoming similar to NEPA requirements.

This EIS/EIR addresses the Cajon Pipeline project, three segment alternatives identified during the environmental review process, and several marketing alternatives to the project. Marketing alternatives are alternatives that would partially or completely achieve the same objective as the Cajon Pipeline but which are beyond the control of the BLM, and include:

- Rebuilt - upgraded M-70 Pipeline from Lebec in Kern County to Los Angeles Basin.
- Revised and Modified Four Corners Pipeline from Cadiz in San Bernardino County to the Los Angeles Basin.
- Pacific Pipeline from Gaviota in Santa Barbara County to Los Angeles Basin.

The report includes a detailed analysis of the Cajon Pipeline project, the segment alternatives, and briefer, summary analyses of alternatives to the Cajon Pipeline project. Detailed analyses of other alternatives to the Cajon Pipeline project are found in other environmental documents and are included here by reference rather than repeated in full.

TABLE 1-2
Approval Requirements for the Cajon Proposal

Agency	Responsible Subdivision	Activity Requiring Approval	Form
FEDERAL			
U.S. Department of the Army	Corps of Engineers	Pipeline Construction in the Whittier Narrows Dam Area	Permit for work in navigable waters
	Corps of Engineers	Los Angeles River; San Gabriel River; Rio Hondo Flood Control Channel	Crossing Permits
U.S. Fish and Wildlife Service		Pipeline Construction within Endangered Species Habitat	Construction Permit under Section 7 of the Endangered Species Act
Environmental Protection Agency or Designated Air Quality District		Transfer Piping to Storage	Permit to Construct
		Installation of Storage Tanks	Permit to Construct
		Operation of Storage Tanks	Permit to Operate
		Operation of Pumping Equipment	Permit to Operate
		Wastewater Discharges	Permit
Federal Communications Commission		Operations Requiring Extensive Radio Communications	License
			License
U.S. Department of Interior	Bureau of Land Management	Pipeline Construction Across Federal Lands	Grant of ROW Section 28 of Mineral Leasing Act NEPA Record of Decision
CALIFORNIA GOVERNMENTAL AGENCIES			
California OSHA		Construction of Pipeline	Permit to Construct
California Department of Fish and Game		Construction of Pipeline Across Streams	Construction Permit Sections 1601 & 1602, Calif. Fish & Game Code

TABLE 1-2
Approval Requirements for the Cajon Proposal

Agency	Responsible Subdivision	Activity Requiring Approval	Form
California Water Resources Board		Discharge of Ground and Surface Waters	Discharge Permit, where applicable, Title 23, Ch. 3, CAC
California Public Utilities Commission		Construction of Pipeline	Certificate of Public Convenience and Necessity
California Department of Transportation		Construction of Pipeline Across State Highways	Easement, Division 1, Chapter 3, Streets and Highways Code
California Department of Water Resources		Crossing of the California Aqueduct	Encroachment Permit
State Lands Commission		Construction Across State-Owned Lands Under State Lands Commission Jurisdiction	Authorization
State Office of Historic Preservation		Disturbance of Cultural Resources	Permit under Section 106 Consultation
Southern California Air Pollution Control District		Operation of Pump Stations	Operating Permit
South Coast Air Quality Management District		Construction & Connection at Terminal	Permit
California Division of Forestry		Open Burning of Right-of-Way Debris	Burning Permit
Metropolitan Water District		Construction of Pipeline Across Facilities	Easement/ Consent
Southern California Edison Company		Construction of Pipeline Across Transmission Lines Rights-of-Way	Consent
Los Angeles Department of Water & Power		Construction of Pipeline Across Transmission Line Rights-of-Way	Consent
San Bernardino County	San Bernardino County Flood Control District	Construction of Pipeline Across County Drains Construction Across and Within Flood Control Right-Of-Way	Easement & Encroachment Permit

TABLE 1-2
Approval Requirements for the Cajon Proposal

Agency	Responsible Subdivision	Activity Requiring Approval	Form
	San Bernardino County Road Department	Construction of Pipeline Across County Roads	Excavation Permit
	San Bernardino County Board of Supervisors	Encroachment of Pipeline in County Roads	Excavation Permit
Los Angeles County	Los Angeles County Flood Control District	Construction Across and Within Flood Control Right-of-Way	Encroachment Permit
	Los Angeles Department of Transportation	Construction Across County Roads	Excavation Permit
City of Adelanto		Construction of pump station	Development Plan, Conditional Use Permit, & Certification of the EIR under CEQA
Cities of: Adelanto, Victorville, Fontana, Rancho Cucamonga, Ontario, Montclair, Pomona, Industry, Pico Rivera, Montebello, Downey, South Gate, Paramount, Compton, Long Beach, and Carson		Construction Across City Roads	Crossing Permits and/or Franchises

SOURCE: EIP Associates and Cajon Pipeline Company.

2.0

Synopsis of Project and Alternatives

2.0 SYNOPSIS OF PROJECT AND ALTERNATIVES

2.1 ENVIRONMENTAL IMPACTS OF THE CAJON PIPELINE PROJECT

The Cajon Pipeline Company proposes to build a 142-mile-long pipeline from 12-Gauge Lake, 27 miles west of Barstow, California, to the Los Angeles crude oil terminals in Carson and Long Beach. The purpose of the environmental process is to identify positive and adverse impacts, particularly those that are significant and unavoidable. Table 2-1 lists all impacts and mitigation measures for the Cajon Pipeline and includes a determination of significance before and after mitigation, who is responsible for assuring compliance and implementation timing.

2.2 ENVIRONMENTAL IMPACTS OF THE PROPOSED PROJECT ALTERNATIVES

Several alternatives to the Proposed Cajon Pipeline Project are discussed in detail in the EIS/EIR. A number of alternatives after investigation were found to be not viable, resulting in two alternatives being assessed. A summary of the impacts of the proposed Cajon Pipeline and a synopsis of the following three alternatives: Kramer Segment Alternative, Sycamore Segment Alternative, and No Project Alternative, is presented in Table 2-2.

Potential Areas of Controversy

The Major areas of controversy identified through the public review stem from the project's perceived safety and health hazard; proximity to an elementary school; collocation danger in proximity to other utilities and pipelines; its potential disruption to local jurisdictions; and, air emissions. These issues have been identified as System Safety, Transportation, Utilities, Land Use, and Air Quality. These areas are addressed in detail in the document.

Unavoidable Significant Impacts

Only impacts relating to air quality were found to be significant and unavoidable with all of the remaining impacts identified through analysis found to be mitigable. Mitigation measures proposed would in these cases be able to reduce the impacts to a level of less-than-significant.

This page intentionally left blank.

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
5.1 Geology							
5.1.1-1	**The pipeline route would cross active traces of the San Andreas and San Jacinto faults, and may cross the potentially active or buried segments of the Cucamonga, Whittier, and Newport-Inglewood faults.**	S	5.1.1-1(a)	*Additional studies shall be performed during the geotechnical investigation for the design of the proposed pipeline to identify the locations and width of the fault crossings. This data would be verified during excavation for the pipeline by an engineering geologist. Any deviations from the previously identified locations and width of the fault crossing would be incorporated into the fault crossing design.*	LS	BLM	Prior to construction
			5.1.1-1(b)	*At locations of fault crossings special design details shall be incorporated into pipeline design to mitigate the anticipated lateral displacements associated with fault rupture. The fault crossing design may comprise crossing the faults at an angle that allows ductile steel pipe to deform without rupturing. This typically requires crossing the fault at an angle of 60 to 85 degrees in the direction that will place the pipe in tension during faulting, rather than in compression.*		BLM	Prior to construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		The pipe shall then be placed in a V-cut trench with sidewalls inclined as flat as 1.5:1 and backfilled with low shear strength material. Alternatively, fault crossing solutions could include crossing the fault on the ground surface or placing the pipeline in a larger pipe casing that could absorb the anticipated fault displacement without impacting the oil pipeline. Seismic joints should be constructed in the annular space between the two pipes to provide support during static operating conditions. These joints should absorb fault movement by separating or crushing. These design details shall be undertaken by a registered civil engineer and approved by the BLM.			
		5.1.1-1(c) *Remotely operated automatic block valves shall be located at active fault crossings, as shown in Table 3-1 of the Final EIS/EIR.*		BLM	Prior to construction
		5.1.1-1(d) *An Oil Spill Contingency Plan shall include emergency plans for rupture of the pipeline at fault crossings. This plan shall be reviewed by the Emergency Response Review Committee. The*		BLM	Prior to operations

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
				committee shall provide recommendations to the Lead Agencies for implementation of the plan. This plan shall be finalized and approved by the Lead Agencies (BLM, and the City of Adelanto).			
5.1.1-2	**The pipeline route would encounter areas of steep slope with potential instability and restoration problems.**	S	5.1.1-2(a)	*To avoid slope instabilities and increased erosion, directional drilling construction techniques shall be utilized on the CalNev slope (M.P. 59). The project proponent shall pursue an alternative alignment at M.P. 74 to avoid steep slopes. This alternative alignment has been identified as Sycamore South Segment Alternative in this document and shall be approved and/or rejected by the Lead Agencies (BLM, and the City of Adelanto).*	LS	BLM	Alternative alignment incorporated into proposed action
			5.1.1-2(b)	*The revegetation actions within the Erosion and Sediment Control Element of the COM Plan shall include slope stabilization measures where necessary to the satisfaction of the Erosion and Sediment Control Review Committee.*		BLM	Prior to construction
5.1.1-3	**The pipeline route crosses areas susceptible to liquefaction.**	S	5.1.1-3	*The pipeline route between M.P. 62 and M.P. 85 and M.P. 120 and M.P. 142 shall be reviewed to determine the location of the groundwater table, the characteristics*		BLM	Prior to construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		of underlying soil and hence the most appropriate measure to reduce liquefaction potential or provide protection of the pipeline from soil liquefying. These measures may include - but would not be limited to: (*a*) *use of stone/gravel columns to improve dissipation characteristics and increase density of soil where appropriate, or* (*b*) *concrete coating the pipeline to prevent pipe rising out of the ground.*			
5.1.1-4 **Pipeline construction would require excavation and stockpiling of soil and may result in soil erosion.**	S	5.1.1-4(a) *An Erosion and Sediment Control Element of the COM Plan shall be submitted to the BLM, USFS and the City of Adelanto as specified in Mitigation Measures 5.2.1.1 This element shall be reviewed by the Erosion and Sediment Control Review Committee. The committee shall provide recommendations to the Lead Agencies for implementation of the element. This element shall be finalized and approved by the Lead Agencies (BLM and the City of Adelanto).*	LS	BLM	Prior to construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact		Level of Significance Without Mitigation	Mitigation Measures		Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
5.1.1-5	**In urban areas of Los Angeles County, excavation of the pipeline may encounter contaminated soils.**	PS	5.1.1-5(a)	*A detailed Phase I site assessment shall be undertaken following detailed engineering design to identify the exact locations and extent of contaminated soils previously identified and others which may potentially occur within the construction rights-of-way. These studies may comprise a review of EPA and other governmental agency's listings of contaminated soil sites.*	LS	BLM/DHS	Prior to construction
			5.1.1-5(b)	*Soils must be visually inspected as excavation occurs. If by visual inspection there is any evidence that contamination may be present, soil testing shall be undertaken at the identified location of contamination. No construction of the pipeline will occur within soil exhibiting evidence of contamination, until written approval from the regulatory agencies that have authority has been received.*		BLM/DHS	During construction
5.1.1-6	**A accidental pipeline leak or rupture would result in soil contamination and potential ground water contamination in areas of high ground water occurrence.**	PS	5.1.1-6(a)	*Contaminated soils shall be excavated, treated, and disposed of at a registered landfill.*	LS	BLM/DHS	Throughout project

S = Significant	SU = Significant Unavoidable	B = Beneficial	LS = Less Than Significant
PS = Potentially Significant	N/A = Not Applicable		

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		5.1.1-6(b) *An Oil Spill Contingency Plan shall be developed which would include procedures for removal of contaminated soils and containment procedures in areas of high groundwater, and revegetation and restoration of damaged areas. This plan shall be reviewed by the Emergency Response Review Committee. The committee shall provide recommendations to the Lead Agencies for implementation of the plan. This plan shall be finalized and approved by the Lead Agencies (BLM and the City of Adelanto). Revegetation and restoration shall be in accordance with the Erosion and Sediment Control Element of the COM Plan and shall be reviewed by the Erosion and Sediment Control Review Committee.*		BLM	Prior to operation
		5.1.1-6(c) *Implementation of Mitigation Measure 1-5.1.1-1(c).*		Not applicable	
		5.1.1-6(d) *Soil that is to be used as fill must be clean, similar to surrounding soils, capable of supporting the existing vegetation and consistent with the requirements for fill as outlined within the Erosion and Sediment Control Element of the COM Plan. This element shall be*		BLM	Throughout project

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		reviewed by the Erosion and Sediment Control Review Committee.			
5.1.1-7 **The pipeline route may interfere with plugged and abandoned active and inactive oil wells.**	S	5.1.1-7(a) *Prior to commencing construction, the Cajon Pipeline Company shall consult with the Department of Conservation, Division of Oil and Gas (DOG) for information on wells located within the pipeline right-of-way.*	LS	BLM	Prior to construction
		5.1.1-7(b) *If the pipeline is located over or in proximity to (that is near or within the right-of-way) of a plugged and abandoned well, then coordination shall be undertaken with the DOG to ensure that the well is correctly abandoned and does not require re-abandonment.*		BLM	Prior to construction
5.2 Onshore Water Resources					
5.2.1-1 **Construction of the proposed pipeline from M.P. 0 to M.P. 80 and at stream crossings could result in high rates of erosion and generation of sediment load which could impact water quality.**	S	5.2.1-1(a) *Construction activities shall be scheduled for the dry season. If stream conditions are such that the channel contains some surface flow, cofferdams or other construction techniques shall be utilized subject to the approval of the Lead Agencies (BLM and the City of Adelanto). Federal lands (both BLM and USFS) will only be used with prior approval of and*	LS	BLM	During construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		under the direct supervision of the BLM or Forest Service, to minimize the amount of suspended sediments resulting from trenching activities. Downstream detention basins, sedimentation traps, evaporation ponds, etc., shall also be installed.			
		5.2.1-1(b) *The Cajon Pipeline Company shall be advised to seek early consultation with the Department of Fish and Game (CDFG) to obtain a Streambed Alteration Agreement under Section 1601 for construction activities across the following streams and washes -Fremont Wash, Crowder Canyon, Cleghorn Canyon, Cajon Creek, Sycamore Canyon, and Lytle Creek. Under this agreement any mitigation measures if any would be decided at the time of consultation.*		CDFG	Prior to construction
		5.2.1-1(c) *At stream crossings, the disturbance of the streambed and banks required for construction equipment shall be kept to a minimum, but in no cases greater than 100 feet by 250 feet.*		BLM	During construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		5.2.1-1(d) *An Erosion and Sediment Control Element, as part of the COM Plan shall be submitted to the appropriate governmental agencies for approval by the project proponent prior to grading. The Erosion and Sediment Control Element shall be reviewed by the Erosion and Sediment Control Review Committee for any further comments prior to implementation. This element shall include, but is not limited to, the following erosion control methods.*		BLM	Prior to construction
		(i) Topsoils (at least the top 6" of soil) would be removed and segregated from the ditch spoils, and would be replaced as topsoil upon completion of construction.		BLM	During construction
		(ii) During construction, interceptor ditches or drainage swales shall be used to intercept storm runoff to prevent sediment from leaving a disturbed area or entering adjacent streams. In addition, temporary mulching, seeding, or other suitable stabilization measures shall be used to protect exposed areas.		BLM	During construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		(iii) *Excess soil from construction on National Forest lands shall be placed on Forest roads, under the direction of the Forest Service. Excess soil from construction on BLM lands shall be either disposed of at a registered landfill or placed on public roads within BLM lands, under the direction of the BLM.*		BLM/USFS	During construction
		(iv) *Revegetation methods shall include discing and drilling on the contour (with broadcast seeding of a native species mix), fertilizing, water barring, tree spading of mature species along the ROW into the disturbed areas, and scattering of previously cleared brush throughout cleared/disturbed areas. Revegetation methods shall be reviewed by the Erosion and Sediment Control Review Committee. Recommendations on the plan shall be made to the Lead Agencies (BLM and the City of Adelanto).*		BLM/USFS	Following construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		(v) *Illegal vehicle entry into revegetated areas on National Forest lands shall be precluded by: a) stockpiling all vegetation and boulders removed during construction, and randomly scattering them throughout the disturbed areas after revegetation, concentrating some in areas of easiest illegal access; b) screening of the ROW in areas of easy illegal access by using a tree spade to plant mature species from nearby areas; c) barricading some areas of easy illegal access to the satisfaction of the Forest Service; d) replacing roadside berms with larger than normal berms where the alignment crosses National Forest roads; and e) replacing any disturbed or breached fencing with the same quality or better fencing. Where the route enters Forest land from the north in Baldy Mesa, a large steel lattice work, approved by the Forest Service, sufficient to preclude OHV passage and set in concrete, will be erected, anchored into the downslope on the west edge*		USFS	Following construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		and running east to Baldy Mesa Road proper.			
		(vi) *The CalNev slope in Cajon Pass shall be directionally drilled to avoid disturbance of surface soils.*		BLM/USFS	During construction
		(vii) *Soil on graded slopes shall be revegetated in accordance with the Erosion and Sediment Control Element of the COM Plan and to the satisfaction of the Erosion and Sediment Control Review Committee as soon as possible following disruption.*		BLM/USFS	Following construction
		5.2.1-1(e) *A National Pollutant Discharge Elimination System (NPDES) permit shall be obtained from the RWQCB for grading of the pipeline right-of-way and construction at Cajon Terminal and the Adelanto Pump Station. Construction shall also comply with storm water quality management programs of the respective local agencies.*		RWQCB	Prior to construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
5.2.1-2	**Construction of the pipeline may interfere with operation of the Whittier Narrows Dam, Etiwanda Creek percolation basins, the Rio Hondo spreading basins, and the Dominguez Gap percolation ponds.**	PS	5.2.1-2	*Prior to construction, the Cajon Pipeline Company shall coordinate with the U.S. Army Corp of Engineers, the San Bernardino County Flood Control District, Metropolitan Water District, and the Los Angeles County Department of Public Works to determine location of existing facilities that may be affected by pipeline construction, and appropriate construction scheduling taking into consideration the operations of the Whittier Narrows Dam, Etiwanda Creek percolation ponds, the Rio Hondo Spreading grounds and the Dominguez Gap percolation ponds.*	LS	BLM/COE/ SBCFCD/MWD/ LACDPW	Prior to construction
5.2.1-3	**Construction of the storage area and pumping facilities may result in an increase in stormwater runoff.**	S	5.2.1-3	*The storm drainage system for the Adelanto pump station shall be sized, designed and constructed in accordance with requirements of the City of Adelanto and consistent with the city's Master Drainage Plan.*	LS	Adelanto	Prior to construction
5.2.1-4	**Hydrostatic testing of the pipeline would result in discharge of test water.**	LS	5.2.1-4	*All test water shall be discharged at the GATX Carson Terminal in accordance with the terms of the terminal NPDES permits. No water shall be discharged on Forest Service lands.*	LS	RWQCB	Prior to operations

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
5.2.1-5	**A pipeline or pipeline tank leak or rupture could result in an oil spill and subsequent degradation of surface runoff by spilled crude oil.**	S	5.2.1-5(a)	*An Oil Spill Contingency Plan shall be developed which would include procedures for oil spill cleanup at river crossings. This plan shall be reviewed by the Emergency Response Review Committee. The committee shall provide recommendations to the Lead Agencies for implementation of the plan. This plan shall be finalized and approved by the Lead Agencies (BLM and the City of Adelanto).*	LS	BLM	Prior to construction
			5.2.1-5(b)	*Remotely operated automatic block valves will be located in the pipeline route along the Cajon Wash (M.P. 72) and Etiwanda Creek (M.P. 80), and as shown in Table 3-1.*		BLM	Prior to construction
			5.2.1-5(c)	*In those areas where the alignment will be in Old Cajon Boulevard, asphalt curbing shall be installed along all downslope edges of the pavement, to route and contain any product spills from ruptures. Any spill plans, or emergency response/repair plans, would have maps locating drainage structures leading from the pavement into Cajon Creek or its tributaries. Such plans will provide for*		BLM	Prior to construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact		Level of Significance Without Mitigation	Mitigation Measures		Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
				the rapid closure/blocking/plugging of such structures.			
			5.2.1-5(d)	*Implementation of Mitigation Measures 5.12-1 to contain and reduce spills.*		Not applicable	
			5.2.1-5(e)	*At M.P. 99.5 and 100.1 the Cajon Pipeline Company shall coordinate with the City of Pomona methods of reducing the risk of oil spill into the storm channels below these crossings. This may require rerouting so that the pipe can be bored beneath these channels, or inclusion of additional valves at these locations to reduce the linefill at each crossing. Additionally, if pipe is to be hung from the bridge support structure, engineering review shall be conducted to ensure engineering integrity and strength of each bridge.*		City of Pomona/BLM	Prior to construction
5.2.1-6	**The pipeline could be exposed to scour and natural changes in the stream's channel morphology over its operational life.**	S	5.2.1-6	*Modeling of stream bed geometry shall be undertaken to determine the scour depth of the 100-year 24-hour runoff event for all major stream crossings. The pipeline burial depth shall be that scour depth plus six feet. The pipeline burial depth shall be checked annually at the following important crossings: Buckhorn Wash,*	LS	BLM	Prior to construction

S = Significant
PS = Potentially Significant

SU = Significant Unavoidable
N/A = Not Applicable

B = Beneficial

LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
				Fremont Wash, Crowder Canyon, Cajon Creek and Lytle Creek. When the stream channel has degraded to the point where the pipeline is exposed or is buried less than four feet below the 100-year scour depth, the pipeline shall be reburied to the proper depth. A concrete blanket shall be required at Crowder and Cajon Canyon Wash crossings.			
Biological Resources							
5.3.1-1	**Construction activities could result in substrate removal, increased sedimentation, and habitat alteration for aquatic species, including the speckled dace, a federal candidate (category 2) and a species of special concern.**	S	5.3.1-1	*Construction areas for stream crossings shall be located outside the stream channel. In addition, the width of the construction right-of-way shall be minimized where ephemeral streams must be crossed, and no waste construction materials shall be discharged into any drainage areas, channels, or washes.*	LS	BLM	During construction
5.3.1-2	**Construction activities may result in a spill of fuel or lubricant used in the operation of construction equipment, which could damage aquatic or riparian habitat off site. In addition, many places where drainages are spanned by the pipeline, debris or toxic**	S	5.3.1-2(a)	*Fueling, lubrication and maintenance of construction equipment shall not be permitted within 500 feet of streams. Equipment shall be checked by Cajon Pipeline Company at least once a day for leakage, and leaking equipment shall be retired from use until repaired.*	LS	BLM	During construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
	substances used in construction and welding could fall into the channel, cause local or downstream impacts either immediately or in the future.						
			5.3.1-2(b)	*Any soil contaminated by leakage of fuel or lubricants from construction vehicles shall be removed, treated, and dispersed of in a registered landfill. The ground surface shall then be restored to its pre-construction condition, including revegetation, consistent with the Erosion and Sediment Control Element of the COM Plan.*		BLM	Prior to construction
5.3.1-3	**Pipeline construction will result in the removal of up to 630 acres of common native plant communities, not including staging areas, along the portion of the proposed pipeline than passes through non-urbanized or lightly urbanized habitats.**	S	5.3.1-3(a)	*A pre-construction meeting, to be attended by project management staff, site foremen, a qualified biologist, and biological monitor, shall be held. At this meeting, avoidance and minimization of vegetation impacts both within and outside of the ROW will be discussed to ensure that the construction management team are aware of sensitive areas and are areas to be avoided, and means of reducing impacts.*	LS	BLM	Prior to construction

S = Significant
PS = Potentially Significant

SU = Significant Unavoidable
N/A = Not Applicable

B = Beneficial

LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures		Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		5.3.1-3(b)	*Native species shall be used to revegetate areas disturbed by the project as described in the COM Plan (See Mitigation Measure 5.2.1-1(c). Representatives of BLM and USFS shall be consulted for advice on, and approval of, the list of species and procedures to be used for revegetation of the different habitats to be affected.*	LS	BLM	Prior to construction
		5.3.1-3(c)	*The Cajon Pipeline Company shall procure permits from the Agricultural Commissioner of the respective County and permission of the land owner prior to the removal of any cacti or Joshua Trees. Specimens up to 7 feet in height shall be relocated outside of the ROW by appropriate techniques.*	LS	BLM	During construction
		5.3.1-3(d)	*Spoil material from trenching and grading activities shall be salvaged. This will allow preservation of seedbank material in areas of natural vegetation, including stream and wash crossings. A double windrow method shall be used to separate topsoil from the remaining spoil material. Topsoil shall be bladed to the outside of the spoil pile. Replacement of spoil, then*	LS	BLM	During construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		topsoil, will be achieved with an auger or other suitable equipment. The use of these types of equipment will reduce impacts to natural habitats in the spoil area of the construction zone.			
		5.3.1-3(e) *Sensitive plant communities as identified by the BLM and USFS which may include the macrophytic community or riparian communities shall be flagged and avoided during construction.*	LS	BLM	Prior to construction
		5.3.1-3(f) *Use of the ROW in creosote and saltbush scrub shall be limited to crushing where topography allows, and when no fill or excavation is required. Disturbances for individual activities, such as lay-down, maintenance, etc., shall be located adjacent to each other within the ROW to minimize concentrated disturbances..*	LS	BLM	During construction
		5.3.1-3(g) *A BLM field biologist or other qualified BLM personnel shall be present onsite during the initial ROW preparation to determine areas requiring minimal acceptable clearance procedures.*		BLM	Prior to construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
5.3.1-4	**Construction of the Cajon Terminal would eliminate an estimated maximum of 20 acres (or much more area if impacts extended outside the ROW) of the soil crust microcommunity in which Mojave spineflower occurs.**	S	5.3.1-4(a)	*A map for the proposed staging area and turnarounds for the northernmost 25 miles of the pipeline route shall be submitted to the BLM for approval before construction is initiated to ensure that staging areas and turnarounds are within the ROW, the tank farm or existing roadways and cleared areas. The BLM will verify that only the working right-of-way, existing areas points and previously cleared areas will be utilized.*	LS	BLM	Prior to construction
			5.3.1-4(b)	*The limit of Cajon Terminal shall be fenced, and the boundary of the ROW staked and flagged. Construction and private vehicles shall not be driven outside these boundaries.*	LS	BLM	During construction
5.3.1-5	**Construction along the pipeline route will result in the death or displacement of common and sensitive wildlife species along the ROW.**	S	5.3.1-5(a)	*During construction where large quantities of brush is cleared, the slash shall be temporarily piled just outside of the ROW and then spread over the ROW to provide cover for displaced animals.*	LS	BLM	During construction
			5.3.1-5(b)	*For areas with moderate to high quality habitat, M.P.0 to M.P.70, the length of construction spreads shall be less than 1,000 feet to allow wildlife to migrate to undisturbed areas.*		BLM	During construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		5.3.1-5(c)	*No construction shall occur within the Baldy Mesa area, especially on National Forest lands, from March 1 through July 15, to avoid impacts upon breeding Bell's sage sparrow.*		BLM	During construction
		5.3.1-5(d)	*No construction shall occur on National Forests lands from SR-138 south to Sycamore Flats from January 1 through July 31 to avoid disturbing Golden Eagle breeding.*		BLM	During construction
		5.3.1-5(e)	*No construction shall occur on National Forest lands from SR-138 south to the Glen Helen area, from 1 April through June 30, to avoid impacting Yellow Warbler breeding.*		USFS	During construction
		5.3.1-5(f)	*No construction shall occur in areas adjacent to riparian habitat (M.P.63.5) from April 1 through June 30 during the nesting period of the least Bell's vireo.*		USFS	During construction
		5.3.1-5(g)	*To the extent feasible, open steep-walled ditches and holes shall not be left unattended for prolonged periods during construction, but shall be covered flush with the ground surface. Open pipe shall be capped and/or stored away from*		BLM	During construction

S = Significant
PS = Potentially Significant

SU = Significant Unavoidable
N/A = Not Applicable

B = Beneficial

LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
				natural habitat areas. Animals trapped in holes or ditches shall be carefully removed or provided with a means of escape such as an inclined board or branch.			
5.3.1-6	**Pipeline construction could eliminate western spadefoot toad breeding areas, or could destroy individuals burrowed in the ground outside the breeding season.**	S	5.3.1-6(a)	*A survey for western spadefoot toad shall be carried out in suitable areas (Cajon Wash, Lytle Creek, and alluvial sands habitats south of Lytle Creek) between February and April.*	LS	BLM/CDFG	Prior to construction
			5.3.1-6(b)	*If this species is found within the ROW, either the ROW shall be rerouted to avoid breeding habitat, or, with the approval of BLM and USFS, the population shall be temporarily removed and housed off site, then reintroduced following habitat restoration.*		BLM/CDFG	Prior to construction
5.3.1-7	**Construction of the proposed pipeline will result in the permanent elimination of approximately 25 acres of Category 1 desert tortoise habitat for Cajon Terminal construction and a temporary elimination of approximately 385 acres along the**	S	5.3.1-7(a)	*Portions of the ROW where tortoises or their sign were found during the preliminary survey shall be surveyed according to the most recent published protocol during a high activity season for the tortoise (late March through mid-June, or in September), and occupied burrows shall be hand-excavated by*	LS	BLM/CDFG	Prior to construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
	length of the ROW. Construction could also result in the inadvertent death of, or injury to, individual tortoises.			*biologists, under federal permit and MOU from CDFG. Tortoises removed shall be placed in newly constructed burrows at least 150 feet from the boundary of the ROW and fenced in for up to one week to maximize the chance of adopting the artificial burrow.*			
			5.3.1-7(b)	*Following pre-construction surveys and relocations, construction of the pipeline within tortoise habitat shall be restricted to October through March, when tortoises are hibernating.*		BLM	During construction
			5.3.1-7(c)	*A wildlife biologist with desert tortoise expertise, acceptable to the BLM, USFWS, and CDFG, will be present during construction. Tortoises encountered and observed will be handled in accordance with the appropriate established protocols as described in Technical Appendix I (Biological Evaluation/Biological Assessment).*		BLM	During construction
			5.3.1-7(d)	*Funding as determined by the BLM and CDFG shall be provided for the rehabilitation of inadvertently injured tortoises.*		BLM	Throughout project

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
5.3.1-8	**Construction along the pipeline route may result in disruption of disjunct populations of the zebra-tailed lizard.**	S	5.3.1-8	*A focused survey of the zebra-tailed lizard populations along the pipeline route shall be conducted to ascertain any changes in zebra-tailed lizard distributions and population mapping in the vicinity of the pipeline ROW in the Cajon and Lytle Creek washes. If population levels are adequate to ensure recolonization of the ROW following revegetation or population mapping demonstrates that the population are distant from the ROW then no further mitigation will be implemented; if they are not, additional specific Mitigation Measures will be developed in consultation with CDFG and USFWS and be implemented.*	LS	BLM	Prior to construction
5.3.1-9	**Construction noise may affect wildlife species, especially birds and breeding amphibians, in habitats adjacent to the pipeline route.**	S	5.3.1-9(a)	*Along riparian areas (Cajon Wash, Lytle Creek, Whittier Narrows area), and in the Baldy Mesa area, construction activity shall be restricted to mid-summer and fall to reduce potential impacts upon breeding birds. (See Mitigation Measure 5.3.1-5).*	LS	BLM	During construction
			5.3.1-9(b)	*During the breeding season of vocal amphibians, from January 1 through March 31, construction in the vicinity of suitable breeding habitat shall be limited to the daylight hours.*		BLM	During construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
5.3.1-10	**The increased presence of people in remote areas increases the potential for wildlife harassment and illegal hunting and collecting.**	LS	5.3.1-10(a)	*Vehicle operation off the ROW shall be prohibited except where specified by the landowner or land management agency.*	LS	BLM	During construction
			5.3.1-10(b)	*Mitigation Measures discussed in Mitigation Measure 5.2.1-1(d)(vi), a part of the Erosion and Sediment Control Element of the COM Plan, will preclude illegal OHV activity within the National Forest boundary.*		BLM	Prior to construction
			5.3.1-10(c)	*No firearms shall be allowed in the construction area. Employees shall be instructed that no hunting or collecting will be allowed. The names of any employees found to be violating these rules will be provided to the appropriate agency.*		BLM	During construction
5.3.1-11	**Terrestrial plant communities and wildlife could be destroyed or damaged by an oil spill if the pipeline were to rupture or leak.**	LS	5.3.1-11(a)	*Refer to the mitigation measures recommended within Section 5.12 (System Safety and Responsibility) regarding details for spill prevention.*	LS	Not applicable	
			5.3.1-11(b)	*An Oil Spill Contingency Plan shall provide for the pipeline owner's financial responsibility for any clean-up on public*		BLM	Prior to operation

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact		Level of Significance Without Mitigation	Mitigation Measures		Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
				lands, and will give the BLM or Forest Service final decision-making authority as to the completeness of any such clean-up. This plan shall be reviewed by the Emergency Response Review Committee. The committee shall provide recommendations to the Lead Agencies for implementation of the plan. This plan shall be finalized and approved by the Lead Agencies (BLM and the City of Adelanto).			
			5.3.1-11(c)	*Automated block and check valves shall be installed at major stream crossings and reaches of streams where the route is parallel to the waterway (Refer to Mitigation Measure 5.2.1-5).*		Not applicable	
5.3.1-12	**Damage to aquatic habitats and to many species dependent upon it could result from failure of the pipeline near a stream crossing and consequent discharge of oil into a watercourse.**	S	5.3.1-12	*Implementation of Mitigation Measures 5.3.1-10(a), (b) and (c) and 5.2.1-6.*	LS	Not applicable	

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
5.3.1-13	**Degradation of terrestrial habitats, or of aquatic habitats downslope from pipeline construction and staging areas, could result from spills or discharge of hazardous materials used in construction and welding.**	S	5.3.1-13(a)	*Material Safety Data Sheets for all hazardous materials to be used on portions of the pipeline route that cross public lands shall be submitted to the agencies with jurisdiction over those lands.*	LS	BLM	During construction
			5.3.1-13(b)	*All hazardous materials to be used shall be stored and used properly in all construction and staging areas.*		BLM	During construction
			5.3.1-13(c)	*An Oil Spill Contingency Plan for prompt and complete remediation of any spills that could occur in construction or staging areas shall be submitted to the Lead Agencies (BLM and the City of Adelanto) prior to the initiation of construction activities, and shall be implemented in the event of any spills. This plan shall be reviewed by the Emergency Response Review Committee. The committee shall provide recommendations to the Lead Agencies for implementation of the plan. This plan shall be finalized and approved by the Lead Agencies (BLM and the City of Adelanto).*		BLM	Prior to construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact		Level of Significance Without Mitigation	Mitigation Measures		Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
5.4 Air Quality							
5.4.1-1	**Air pollutant emissions would result from the operation of construction equipment on- and off-site, from disturbed soil, and from transport of workers, equipment and materials.**	SU	5.4.1-1(a)	*A Dust Control Plan shall be submitted to the San Bernardino County Air Pollution Control District and the South Coast Air Quality Management District for approval prior to construction. The plan shall include measures for watering of unpaved ares to reduce particulate emissions, moistening of vehicle loads, stabilization of stock piles, and inspection of emission controls systems on heavy equipment.*	SU	BLM	Prior to construction
			5.4.1-1(b)	*A shuttle service shall be provided for construction workers from a designated staging area to the work site. This shuttle service shall provide an average vehicle ridership of 1.5 AVR for construction employees.*			
			5.4.1-1(c)	*All grading operations on the right-of-way shall be suspended when wind speeds (as instantaneous gusts) exceed 25 miles per hour or in the event of a first or second stage smog alert. The wind speed and air quality conditions shall be monitored by the supervising project engineer.*			

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
			5.4.1-1(d)	*In all graded areas, in particular the remainder of the graded right-of-way which has been inactive for 96 hours shall be covered by a District approved chemical soil stabilizer.*			
5.4.1-2	**Pipeline operation would not result in significant air emissions.**	LS	5.4.1-2	*None required.*	LS	Not applicable	
5.4.1-3	**An accidental oil spill would result in release of hydrocarbon vapors immediately following a spill.**	LS	5.4.1-3	*None required.*	LS	Not applicable	
5.5 Noise							
5.5.1-1	**Community noise levels would be permanently increased in the vicinity of the two pump stations.**	LS	5.5.1-1	*None required.*	LS	BLM	During construction
5.5.1-2	**Community noise levels would be temporarily increased as a result of pipeline construction.**	LS	5.5.1-2(a)	*The expected duration of construction at any one location shall be no more than 5 days with the exception of the terminals and pump stations. Construction activities shall be limited to between the hours of 6:00 a.m. and 5:00 p.m. weekdays, and between 8:00 am to 6:00 pm Saturday and Sunday, except where city staffs have requested otherwise to*	LS	BLM	Prior to inspection

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact		Level of Significance Without Mitigation	Mitigation Measures		Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
				alleviate traffic impacts or where local noise ordinances limit the hours of allowable construction activities. Nighttime construction shall be performed in commercial areas where requested by agency personnel.			
			5.5.1-2(b)	*Public notification signs shall be erected along the right-of-way within urban areas prior to commencement of construction.*			
5.6 Visual Resources							
5.6.1-1	**Development of Cajon Terminal would alter existing visual resources and change existing views from State Route 58.**	S	5.6.1-1(a)	*To ensure that storage tanks and all other above ground facilities contrast as little as possible with the surrounding desert environment, the project proponent shall submit to the BLM for approval, a materials board that displays a sample of the surface soil alongside the specific paint type to be used for each facility. Material boards shall be submitted for each facility located in the desert.*	LS	BLM	Prior to construction
			5.6.1-1(b)	*Earthen levies surrounding the containment tanks shall be designed to look natural (i.e. mounded forms), rather than manufactured (flat surfaces).*		BLM	Prior to construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact		Level of Significance Without Mitigation	Mitigation Measures		Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
			5.6.1-1(c)	*The minimum height to diameter ratios feasible for storage tanks shall be utilized in design in order to reduce tank heights as seen along the highway by lowering the tanks and/or increasing the height of the earthen levies.*		BLM	Prior to construction
5.6.1-2	**Construction of the pipeline route through the high desert would require grading and the use of heavy equipment within a 70-foot right-of-way.**	S	5.6.1-2(a)	*Areas disturbed by pipeline construction shall, to the maximum extent feasible, be regraded, imprinted and revegetated to restore their original appearance in accordance with the Erosion and Sediment Control Element of the COM Plan and to the satisfaction of the Erosion and Sediment Control Review Committee.*	LS	BLM	Prior to construction
			5.6.1-2(b)	*The pipeline route shall avoid the removal of Joshua trees through the minimization of disturbance within the ROW in areas of Joshua tree woodland. Joshua trees less than 7 feet that are removed by grading shall be relocated outside of the ROW. Plant relocations shall be identified by tagging of specimens prior to grading of the ROW.*		BLM	Prior to construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
			5.6.1-2(c)	*All construction activities, including vehicle movement and storage of materials, shall be confined within the pipeline right-of-way. Care shall be taken during construction to avoid damage to vegetation and habitats not directly involved in project construction.*		BLM	During construction
5.6.1-3	**Construction of the Adelanto pump station would result in the conversion of 2.2 acres of vacant land to a built use.**	LS	5.6.1-3	*The site perimeter and parking lot shall be attractively landscaped to screen the facility and enhance the visual quality of the surrounding area subject to review and approval by City of Adelanto.*	B	BLM	Prior to operations
5.6.1-4	**Construction of the pipeline route through the Cajon Pass would result in some landform alteration and the clearing of a right-of-way on visually prominent mountain slopes.**	S	5.6.1-4(a)	*Construction activities and landform alteration on all mountain slopes shall be restricted to the existing Baldy Mesa Road from M.P. 55 to M.P. 63. Construction between M.P. 59 to M.P 60 shall be restricted to a graded swath of 50 feet of the existing cleared right-of-way of the CalNev gas pipeline.*	LS	BLM	During construction
			5.6.1-4(b)	Construction activities and landform alterations on all mountain slopes shall be restricted to existing transmission access roads and existing rural roads from M.P. 20 to M.P. 25 within the Kramer Hills. Construction from M.P. 22 to M.P. 23		BLM	Prior to construction

S = Significant
PS = Potentially Significant

SU = Significant Unavoidable
N/A = Not Applicable

B = Beneficial

LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
				shall be restricted to a graded swath of 50 feet on undisturbed slopes in these areas.			
			5.6.1-4(c)	*Implementation of Mitigation Measure 5.2.1-1(c). The revegetation plan shall be designed to recreate original contours to the degree feasible.*		BLM	Prior to construction
			5.6.1-4(d)	*There shall be no pipeline facilities above ground within the Forest Service boundary except for sign markers and cathodic protection devices. Signing colors and size are dictated by Federal Regulation. Cathodic protection devices shall be painted to blend into and harmonize with the background colors of BLM and Forest lands, using a color approved by the BLM or Forest Service.*		BLM	Prior to construction
5.6.1-5	**Construction of the pipeline route from M.P. 67 to the City of Carson could result in a loss of trees and vegetation alongside highways and other roadways.**	LS	5.6.1-5	*In urban areas, prior to removal of any trees along the pipeline route, a tree removal and planting plan shall be submitted to the local jurisdiction for approval. Where mature trees (6-inch in diameter and larger) are removed they shall be replaced on a one-to-one basis with similar species to the satisfaction of the landowner.*	LS	BLM	Prior to construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
5.6.1-6	**An accidental oil spill would result in conspicuous mark upon open ground in sensitive visual or urban areas.**	S	5.6.1-6(a)	*An Oil Spill Contingency Plan shall be developed which would include procedures for revegetation of spill zones within rural areas. This plan shall be reviewed by the Emergency Response Review Committee. The committee shall provide recommendations to the Lead Agencies for implementation of the plan. This plan shall be finalized and approved by the Lead Agencies (BLM and the City of Adelanto).*	LS	BLM	Prior to operation
			5.6.1-6(b)	*Implementation of Mitigation Measures in Section 5.12 to contain and reduce spills.*	LS	Not applicable	
5.7 Land Use							
5.7.1-1	**Development of the proposed pumping stations (Cajon Terminal and the Adelanto Station) would occupy a total of 27.2 acres of vacant land.**	LS	5.7.1-1	*None required.*	LS	Not applicable	
5.7.1-2	**Construction of the proposed pipeline will result in a temporary disruption of the surrounding area.**	LS	5.7.1-2	*None required.*	LS	Not applicable	

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
5.7.1-3	**Construction of the proposed pipeline in the Cajon Pass would result in a temporary disruption of the surrounding area.**	LS	5.7.1-3	*None required.*	LS	Not applicable	
5.7.1-4	**Construction of the proposed pipeline in developed areas would result in a temporary disruption of the surrounding area.**	S	5.7.1-4(a)	*Construction activities shall be confined to the hours between 6:00 a.m. and 5:00 p.m. weekdays, and 8:00 a.m. to 6:00 p.m. Saturdays and Sundays within 300 feet of any residence or hospital structure housing patients. Construction staging areas shall be located in industrial, commercial, or undeveloped areas. Construction vehicles shall avoid utilizing residential streets to the extent feasible.*	LS	BLM	During construction
			5.7.1-4(b)	*Refer to Mitigation Measures of Section 5.10, Transportation and Circulation.*		Not applicable	
			5.7.1-4(c)	*Construction in any single location shall be between two to five days except at the Adelanto Pump Station and Cajon Terminal where construction duration shall be overseen by the City of Adelanto.*		BLM	During construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact		Level of Significance Without Mitigation	Mitigation Measures		Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
			5.7.1-4(d)	*When pipeline facilities are removed at the end of the life of the pipeline, the ground surface shall be restored to its previous condition, including revegetation. In natural areas, nature species appropriate to individual locations shall be utilized for revegetation.*		BLM	Following decommissioning
5.7.1-5	**An oil spill in urban and rural areas could result in contamination of private property and restriction of land use.**	S	5.7.1-5(a)	*An Oil Spill Contingency Plan shall be developed which would include containment measures to limit the extent of the spill and emergency plan for traffic control in urban areas. This plan shall be reviewed by the Emergency Response Review Committee. The committee shall provide recommendations to the Lead Agencies for implementation of the plan. This plan shall be finalized and approved by the Lead Agencies (BLM and the City of Adelanto).*	LS	BLM	Prior to operation
			5.7.1-5(b)	*Implementation of Mitigation Measures in Section 5.12 to contain and reduce spills.*		Not applicable	

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact		Level of Significance Without Mitigation	Mitigation Measures		Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
5.8 Utilities							
5.8.1-1	**Pipeline excavation could accidentally damage and/or disrupt service of existing utility lines.**	PS	5.8.1-1(a)	*California State legislation requires that at least two days prior to excavation of any subsurface installations, the excavator, in this case the Cajon Pipeline Company, is required to contact a regional notification center. The regional notification center, known as Underground Service Alert for the Southern California area, will notify affected members of impending excavation at or near their underground installations. The notified members are required to mark the specific location of their facilities within the work area prior to the start of excavation. Legislation requires the excavator to expose the underground facilities by hand before using power equipment. Failure to follow this procedure could result in a fine of up to $50,000 and charges for the repair of any damages to the underground facilities.*	LS	BLM	During construction
			5.8.1-1(b)	*The alignment of the pipeline will be designed to minimize or avoid interference with plans, policies, and existing and planned infrastructure during*		BLM	Prior to construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact		Level of Significance Without Mitigation	Mitigation Measures		Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
				its construction. All affected agencies will be consulted regarding the precise alignment of the pipeline within their respective jurisdictions in order to minimize or avoid interference with existing and planned infrastructure and public facilities.			
			5.8.1-1(c)	*A list of contact names and telephones for each agency and utility company whose lines will be crossed will be kept with the construction supervisor for that street crew. Representatives of utility agencies and companies shall be requested to be onsite on the day that utilities under their jurisdiction or ownership are being crossed.*		BLM	Prior to operation
			5.8.1-1(d)	*In the event a utility is interrupted, the agency or company whose service has been disrupted shall be contacted immediately. All construction work shall cease until service has been resumed.*		BLM	Prior to operation
5.8.1-2	**Development of the proposed pipeline within utility corridors could result in collocation dangers as a result of a catastrophic event.**	S	5.8.1-2(a)	*The Incident Command system shall set priorities for disaster repair efforts on utility lines and transportation networks. Those utility lines vital to the region must be repaired ahead of other lines.*	LS	BLM	Prior to operation

S = Significant	SU = Significant Unavoidable	B = Beneficial	LS = Less Than Significant
PS = Potentially Significant	N/A = Not Applicable		

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
			5.8.1-2(b)	*Development of an Oil Spill Contingency Plan as discussed in Mitigation Measure 5.12.*		BLM	Not applicable
5.8.1-3	**The proposed pipeline would be constructed adjacent to existing utilities in the USFS designated Cajon Pass Utility Corridor.**	LS	5.8.1-3	*Any disputes arising between Cajon Pipeline Company and existing users of Federal lands will be resolved by the Forest Service and/or BLM. Existing users have the right to not be adversely impacted by the Pipeline, but their use of existing federal land is not exclusive.*	LS	BLM/USFS	During construction
5.9 Socioeconomics							
5.9.1-1	**The local economy of San Bernardino County would be stimulated by a temporary increase in employment as the project would create 145 construction jobs lasting 60 to 70 days and 42 jobs lasting six to eight months. This would be a 1 percent increase in 1992 construction employment and a 6 percent share of projected growth in construction employment.**	B	5.9.1-1	*None required.*	B	Not applicable	

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
5.9.1-2	**The project would temporarily increase demand for housing for the 140 construction workers for a period of 60 to 70 days, and 9 workers in Adelanto for six months, and 23 workers at Cajon Terminal for eight months.**	LS	5.9.1-2	*None required.*	LS	Not applicable	
5.9.1-3	**The project would temporarily increase population in the adjacent cities by less than 1 percent in all cases except for 2 percent in Adelanto.**	LS	5.9.1-3	*None required.*	LS	Not applicable	
5.9.1-4	**The project would increase permanent employment in Adelanto by 25 to 30 employees or 1 percent over the 1992 estimate of 1,855 local jobs.**	B	5.9.1-4	*None required.*	B	Not applicable	
5.9.1-5	**The worst case increase in demand for permanent housing would amount to 26 units in Adelanto, or 14 percent of the projected average annual increase.**	LS	5.9.1-5	*None required.*	LS	Not applicable	
5.9.1-6	**The proposed project would not be expected to appreciably affect local jobs/housing balances.**	LS	5.9.1-6	*None required.*	LS	Not applicable	

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
5.9.1-7	**The proposed project would increase property tax revenue within the Study Area by about $616,000 in 1993 or 3.4 percent of projected 1991/92 property tax revenue.**	B	5.9.1-7	*None required.*	B	Not applicable	
5.9.1-8	**The proposed project would not disrupt any of the cities economically or socially.**	LS	5.9.1-8	*None required.*	LS	Not applicable	
5.9.1-9	**The local economy would be stimulated by a temporary increase in employment as the project would create 40 construction jobs lasting 60 to 70 days. This would be less than a 1 percent increase in 1992 construction employment and a 1 percent share of projected growth in construction employment.**	B	5.9.1-9	*None required.*	B	Not applicable	
5.9.1-10	**The project would temporarily increase demand for housing for the 40 construction workers for a period of 60 to 70 days.**	LS	5.9.1-10	*None requied*	LS	Not applicable	

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
5.9.1-11	**The project would temporarily increase population in the adjacent cities by less than 1 percent in all cases except for 4 percent in the City of Industry, and less than 1 percent for the study area as a whole.**	LS	5.9.1-11	*None required.*	LS	Not applicable	
5.9.1-12	**The proposed project would increase property tax revenue within the Study Area by about $184,000 or 0.2 percent or projected 1991/92 property tax revenues.**	B	5.9.1-12	*None required.*	B	Not applicable	
5.9.1-13	**The proposed project would not disrupt any of the Cities economically or socially, but the event of an oil spill could temporarily affect local business or a recreational area.**	S	5.9.1-13(a)	*An Oil Spill Contingency Plan shall be developed which would include procedures for containing crude flow and preventing delivery to the storm drain or sewer systems. This plan shall be reviewed by the Emergency Response Review Committee. The committee shall provide recommendations to the Lead Agencies for implementation of the plan. This plan shall be finalized and approved by the Lead Agencies (BLM and the City of Adelanto).*	LS	BLM	Prior to operation

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		5.9.1-13(b) *Implementation of Mitigation Measures in section 5.12 to contain and reduce spills.*		Not applicable	
5.10 Transportation and Circulation					
5.10.1-1 **The pipeline route would require construction within road right-of-ways which may result in interruption to traffic flow.**	S	5.10.1-1(a) *A Transportation Management Element of the COM Plan shall be prepared to detail specific roadway construction information; signing for closures; and, public notification identifying location, scheduling and duration of construction spread. This management element shall also include necessary Traffic Control Plans as required by local jurisdictions through which the pipeline route passes. This element shall be finalized and approved by the Lead Agencies (BLM and the City of Adelanto).*	LS	BLM	Prior to construction
		5.10.1-1(b) *On roadways where trenching shall occur within the roadway right-of-way, one travel lane shall be left open in each direction, delineated by temporary traffic cones/barricades. For minor collectors and neighborhood streets, one lane shall be left open with signal persons to direct through traffic.*		BLM	During construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		5.10.1-1(c) *Construction work on major roadways and through major signalized intersections shall be conducted in off-peak periods (the hours outside of weekday peak commute hours of 7:00 AM to 9:00 AM and 3:30 PM to 6:00 PM), except where city staffs have requested otherwise to alleviate traffic impacts.*		BLM	During construction
		5.10.1-1(d) *Construction trenches shall not be left open, but covered by steel plate to allow access to private and commercial driveways. For safety of bicyclists, asphalt shall be placed around edges of steel plates to secure them and to eliminate abrupt edges.*		BLM	During construction
		5.10.1-1(e) *All County and municipal fire, police and paramedic departments shall be notified regarding the schedule and duration of construction activities. Alternative routes shall be identified that may be used to avoid construction areas.*		BLM	Prior to construction
		5.10.1-1(f) *Coordination shall be undertaken with the appropriate transit authorities to ensure uninterrupted service along bus or train routes, which shall be crossed or paralleled by pipeline construction.*		BLM	Prior to construction

S = Significant
PS = Potentially Significant

SU = Significant Unavoidable
N/A = Not Applicable

B = Beneficial

LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact		Level of Significance Without Mitigation	Mitigation Measures		Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
				Transit locations shall be relocated as necessary in coordination with appropriate agencies to provide access during construction.			
5.10.1-2	**Construction traffic and equipment staging may disrupt traffic movement.**	S	5.10.1-2(a)	*Staging areas for construction equipment and truck traffic shall be located off of the adjacent roadway.*	LS	BLM	During construction
			5.10.1-2(b)	*Heavy machinery such as cranes and boring equipment shall be delivered to each site in the off-peak periods, preferably at night (but outside of the hours 6:00 AM - 9:00 AM and 3:00 PM - 6:00 PM).*		BLM	During construction
			5.10.1-2(c)	*Off-street parking for worker vehicles shall be provided in areas where parking is limited.*		BLM	During construction
5.10.1-3	**Pipeline construction would require excavation across rural roads within public lands from M.P.0 to M.P.65.**	S	5.10.1-3(a)	*Roads that cross public lands under the jurisdiction of the BLM shall be returned to the existing alignment and condition under the supervision of the BLM.*	LS	BLM	During construction
			5.10.1-3(b)	*Roads within Forest Service lands shall be maintained as "roll-and-dip" preserving both existing vertical and horizontal alignment and reconstructed to*		USFS	During construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		the specifications of a Forest Engineer. This includes backfilling of the roadbed to 90 percent of maximum density as determined by AASHTO T-180 (American Association of State Highway and Transportation Officials) or ASTM D-1557 (American Society of Testing and Materials) and compacting disturbed soils near the roadbed to 100 percent of the density of adjacent soils.			
		5.10.1-3(c) *Forest roads interrupted by pipeline construction will have the duration of such interruption kept to a minimum, due to Forest Service needs for emergency fire access to the remote areas these roads serve. In addition, during such disruption, a reasonable detour will be provided in the immediate area by the contractor.*		USFS	During construction
		5.10.1-3(d) *To facilitate future Forest Service road maintenance, all structures appurtenant to the main pipe itself (such as cathodic test stations or route signing) will be located outside of the roadway, in such a manner as to not interfere with road maintenance activities.*		USFS	During construction

S = Significant
PS = Potentially Significant

SU = Significant Unavoidable
N/A = Not Applicable

B = Beneficial

LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
			5.10.1-3(e)	*Pipeline burial depth within Forest roadways will be at least four feet to the top of the pipe, except where such roads cross drainages, and then such depth will be at least six feet to the top of the pipe. In addition, in all locations in which pipeline is located within Forest roadways, identification tape will be buried two feet above the top of the pipe.*		USFS	During construction
			5.10.1-3(f)	*In order to facilitate forest fire service access along Baldy Mesa Road, USFS will require that up to 13 feet width will be open to traffic by 12 noon each day of construction. The roadway shall be capable of supporting 2,800 lbs.*		USFS	During construction
5.10.1-4	**An accidental oil spill would result in traffic congestion during emergency response and clean-up.**	LS	5.10.1-4	*None required.*	LS	Not applicable	

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
5.11 Cultural and Paleontological Resources							
5.11.1-1	**Pipeline construction would result in the disruption and potential impacts to only one potentially significant archaeological resources, CA-SBR-7086, a prehistoric site.**	PS	5.11.1-1(a)	*Monitoring of the resources listed in Table 5.11.1-2 shall be completed by a certified/trained archaeological monitor under the supervision of a certified Principal Investigator. Any resources identified as a result of monitoring must be evaluated in accordance with federal regulations.*	LS	BLM	During construction
			5.11.1-1(b)	*Mitigation of the prehistoric site, CA-SBR-7086 must include a recovery of the surface materials using spatial controls and a series of subsurface testing units to ensure adequate data recovery to minimize adverse impact to the sites. Studies must be completed by trained personnel and under consultation with the BLM, overseer for this site, should any cultural resources be excavated or collected as part of mitigation for the project. These resources shall be curated in accordance with Federal Standards.*		BLM	Prior to construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
5.11.1-2	**Approximately 86 miles of the Cajon Pipeline route was identified as having a high potential of containing significant paleontological resources.**	S	5.11.1-2(a)	*A qualified paleontologist shall be retained to perform inspections of excavation and to salvage exposed fossils within the areas designated as having a high potential for paleontological resources. Standard samples (2.4 cubic meters) shall be undertaken as recommended for specific areas within the Paleontologic Technical Report. The right-of-way excavation shall be inspected after brushing and the trench immediately after excavation. The paleontologist shall have the authority to halt excavation equipment when fossil resources are encountered in order to facilitate fossil removal.*	LS	BLM	During construction
			5.11.1-2(b)	*A curation program shall be undertaken which includes preparation of recovered specimens to a point of identification, including screen washing fossiliferous sediment samples to recover small to microscopic vertebrate fossils and preparation of large fossils recovered in plaster jackets. Specimens shall be identified and curated into retrievable storage collections of the Earth Sciences Division of the San Bernardino County Museum.*		BLM	Following construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

	Impact	Level of Significance Without Mitigation		Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
			5.11.1-2(c)	*A final report, including an itemized and assessioned inventory of recovered specimens, shall be distributed to the appropriate lead agencies. The acceptance of the report by the BLM shall signify completion of the paleontologic program.*		BLM	Following construction
5.12 System Safety and Reliability							
5.12.1-1	**For the pipelines and pump stations it is projected three spills would occur over the life of the project ranging from 9.3 barrels to 1,000 barrels.**	PS	5.12.1-1(a)	Construction Safety Measures i. *Support shall be provided for underground facilities in and near the construction area during work in the trench and backfilling operations to prevent damage to such facilities during construction activities.*	LS	BLM	During construction
				ii. *Hand tools shall be used in utility-intensive areas and within 24 inches of underground structures.*		BLM	During construction
				iii. *In the event of inadvertent damage to an underground facility, work shall be halted in the immediate vicinity on Cajon Pipeline during facility report.*		BLM	During construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		iv. *The Cajon Pipeline Company will notify owners of any underground electrical facilities 48 hours in advance of excavation in the vicinity of these facilities. Cajon Pipeline Company will have an electrical contractor on-call at all times during construction near the potentially affected facility to repair any circuits if required by the owner in the event they are damaged during construction. The appropriate response to hazards associated with damage to natural gas pipelines will be determined in consultation with natural gas utility operators and local fire departments. Local fire departments will be notified of the schedule of construction activities in the vicinity of natural gas lines.*		BLM	Prior to and during construction
		5.12.1-1(b) *Spill Prevention* i. *The recommendations from geotechnical studies shall be implemented for proper pipeline design features in fault zones to accommodate potential ground movement.*		BLM	Prior to construction

S = Significant
PS = Potentially Significant

SU = Significant Unavoidable
N/A = Not Applicable

B = Beneficial

LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		ii. *Internal corrosion prevention techniques shall be implemented in accordance with the requirements of the California State Fire Marshal as part of pipeline maintenance procedures. Such activities may include routinely scheduled periodic pigging of the pipeline on a frequent basis to remove pockets of accumulated fluids that contribute to internal corrosion, such as hydrogen sulfide, carbon dioxide, water and other impurities, or introducing corrosion inhibitors into the crude stream periodically in sufficient quantities to protect the entire potentially affected portion of the system, inspection of the internal surface for corrosion of any pipe removed from the pipeline for any reason, and maintenance of records of this inspection by State Fire Marshall's field engineers.*		*BLM*	*Throughout project*
		iii. *The pipeline will be concrete coated at crossings of Cajon Wash (M.P. 72), Los Angeles River (M.P. 135.7), and San Jose Creek (M.P. 110.1 - 117.2), to help reduce the risk of oil*		BLM	Prior to construction

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		spill effects on significant water supplies and biologically sensitive areas. *The pipeline bored under the California Aqueduct shall be installed inside a casing pipe within DWR's right-of-way. The casing pipe and the pipeline shall be cathodically protected and dielectrically isolated from each other. In addition, the pipeline shall be dielectrically coated and sealed to the casing by the use of a link seal or equivalent. A 2-inch I.D. drain line shall be provided for at the low end of the casing pipe, sloped towards daylight, and away from the Aqueduct. A 3-inch standard weight galvanized steelguard post shall be installed adjacent to each drain line. The post shall extend three feet above the ground and 18-inches below ground. The bottom of the post shall be embedded in at least one cubic foot of concrete.*			

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		The pipeline shall be either concrete coated or installed inside casing pipe adjacent to the Etiwanda Creek percolation basins. The design of the pipeline at this location shall be finalized following consultation with the San Bernardino County Flood Control District.			
		5.12.1-1(c) *Minimize Spill Volume* i. *Additional remote-controlled motor-operated valves and check valves will reduce the maximum potential spill volume along the pipeline route. Table 3-1 presents locations where valves would effectively control maximum spill potential.*		BLM	Prior to construction
		ii. *Even speed and vibration sensors will be installed at pump stations to shutdown the pipeline automatically in the event that the threshold acceleration should be exceeded.*		BLM	Prior to operation
		5.12.1-1(d) *Spill Containment and Response* i. *Cajon shall maintain an up-to-date Oil Spill Contingency (OSC Plan) Plan specific to the Cajon Pipeline in compliance with 49 CFR 195.402*		BLM	Prior to operation

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		subject to the review and approval of the California State Fire Marshall. This plan shall be reviewed by the Emergency Response Review Committee. The committee shall provide recommendations to the Lead Agencies for implementation of the plan. This plan shall be finalized and approved by the Lead Agencies (BLM, USFS, and the City of Adelanto). In addition to compliance with all requirements of 49 CFR 195.402, the California State Fire Marshall should specifically review the Oil Spill Contingency Plan's methods and instructions for containing oil across land, down stream channels and in water. The removal of contained vegetation and methods to protect and care for birds and wildlife in the event they become soiled with oil are also important plan components to be considered in the state Fire marshall's review. *In addition, the plan must include a list of not only the names and*			

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		telephone numbers of the pre-approved response contractors, but information on the type and amount of equipment each can provide, number of laborers available and estimated time to mobilize the response team. A listing of names, numbers and addressed must be provided for emergency access to private lands along the pipeline route. Areas of particular biological sensitivity must be noted and special clean-up techniques outlines should these areas be contaminated. Additionally, areas of archaeological or paleontological significance within the potentially affected spill area that are discovered during the lifetime of the project must be noted in the Oil Spill Contingency Plan. Special clean-up techniques, such as not operating bulldozers, in these areas may be required to reduce impacts on these resources and must be described in the Oil Spill Contingency Plan. Provisions to rehabilitate the habitat affected by the spill and/or by clean-up			

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		activities must also be included in the plan. A monitoring program must be established to assess the rate and overall success of the clean-up and reclamation efforts. ii. *Copies of the approved Oil Spill Contingency Plan must be distributed to all agencies crossed by the pipeline route and local fire departments who may be called on for emergency response. Copies of all updates must be provided.* iii. *Appropriate containment and cleanup measures addressing storm drain and flood control channels will also be addressed in the Oil Spill Contingency Plan.* iv. *Procedures to be followed shall be provided to local fire and police officials and Forest Service and BLM personnel, as they would generally be the first response personnel on-scene in the event of a spill*			

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		v. *Oil spill containment and response equipment shall be supplied and maintained at locations accessible to first response personnel along the route to facilitate rapid response to an oil spill.*			
		vi. *A public education program shall be conducted consistent with 49 CFR 195.440 under the supervision of the California State Fire Marshall to help the public and agencies understand pipeline safety hazards. This program will include distribution of a brochure explaining how to recognize a leak, what to do in the event of a spill and who to call. The brochure will be available to homeowners and residents along the pipeline route, and will be actively distributed by Cajon Pipeline Company along with construction notifications during the installation of the proposed pipeline.*			
		vii. *On-site drainage and collection systems along the route shall include curb construction on the downstream side of Old Cajon*			

S = Significant
PS = Potentially Significant

SU = Significant Unavoidable
N/A = Not Applicable

B = Beneficial

LS = Less Than Significant

TABLE 2-1
Summary of Environmental Impacts and Mitigation Measures for the Proposed Project

Impact	Level of Significance Without Mitigation	Mitigation Measures	Level of Significance With Mitigation	Responsible or Lead Agency	Implementation Timing
		Boulevard (M.P. 72) to retain oil and provide additional time for emergency response personnel to arrive and implement response efforts prior to contamination of adjacent waters.			

S = Significant
PS = Potentially Significant
SU = Significant Unavoidable
N/A = Not Applicable
B = Beneficial
LS = Less Than Significant

TABLE 2-2
COMPARISON OF IMPACT FOR THE ALTERNATIVES

Cajon Pipeline	Kramer Segment Alternative	Sycamore South Segment Alternative	No Project
Geology, Seismicity and Soils			
This pipeline alternative would cross active earthquake traces of the San Andreas and San Jacinto faults, the potentially active trace of the Helendale fault, and the potentially active traces of the Rialto-Colton, Chino and faults in the Whittier Narrows; would encounter areas of steep slopes in the Kramer Hills (M.P. 20), on the Cal Nev slope in the Cajon Pass (M.P. 59), on Old Cajon Boulevard (M.P. 59) and west of Cajon Wash (M.P. 74); may result in soil erosion; and, may encounter soil contamination.	This pipeline alternative would result in similar seismic hazard, liquefaction potential, soil erosion and soil contamination as the proposed project. This alternative would encounter the same steep slopes except that it would not cross through the Kramer Hills which have slopes as locally as steep as 14 percent.	This alternative would have similar impacts to seismic hazard, liquefaction potential, soil erosion, and soil contamination. The route would encounter the same steep slopes as the proposed route except that it would avoid the steep slopes west of Cajon Wash.	The No Project alternative would not have any impacts on seismic hazard, soils, or other earth resources.

TABLE 2-2
COMPARISON OF IMPACT FOR THE ALTERNATIVES

Cajon Pipeline	Kramer Segment Alternative	Sycamore South Segment Alternative	No Project
Onshore Water Resources			
Construction of the proposed pipeline could result in high rates erosion and would require implementation of an erosion and sediment control plan. Construction may also interfere with operations of the Whittier Narrows Dam, Etiwanda Creek percolation basins, the Rio Hondo Spreading basins, and the Dominguez Gap percolation ponds. Storage area and pumping facilities construction may result in an increase in stormwater runoff. A pipeline or pipeline tank leak could result in water quality degradation.	The Kramer Segment Alternative would result in similar impacts as the proposed project.	The Sycamore South Segment Alternative would result in similar impacts as the proposed project.	The No Project Alternative would result in increased oil importation into Long Beach Harbor by way of marine tanker. This would increase the potential risk of oil spills to occur in coastal waters.

TABLE 2-2
COMPARISON OF IMPACT FOR THE ALTERNATIVES

Cajon Pipeline	Kramer Segment Alternative	Sycamore South Segment Alternative	No Project
Biological Resources			
This pipeline alternative could result in habitat impacts for aquatic species; would result in removal of up to 630 acres of common native plant communities; would eliminate an estimated maximum of 20 acres of soil crust micro-community in which the Mohave spineflower occurs; construction could result in the death or displacement of common and sensitive wildlife; could eliminate western spadefoot toad breeding areas; permanent elimination of approximately 25 acres of Category 1 desert tortoise habitat for Cajon Terminal construction and a temporary elimination of approximately 385 acres along the length of the ROW (a total of 287 acres occurs in areas with little or no existing habitat disturbance); construction could result in disruption of disjunct population of the zebra-tailed lizard; construction noise may affect wildlife species, especially birds and breeding amphibians; increased presence of people in remote areas increases the potential for wildlife harassment; and an oil spill could destroy or damage plant communities and wildlife.	The Kramer Segment Alternative would result in similar impacts to desert habitats, impacts due to loss of the soil crust microcommunity in which Mohave spineflower occurs and other sensitive species, such as the zebra-tailed lizard and riparian birds. Construction of the pipeline would result in the permanent elimination of approximately 25 acres of Category 1 desert tortoise habitat for Cajon Terminal construction and the temporary elimination of approximately 294 acres for construction along the length of the ROW. The total 319 acres occurs in areas where there is little or no existing habitat disturbance.	As previously stated, no biological investigation have yet been undertaken for the Sycamore South Segment Alternative between M.P. 73 and M.P. 74 of the proposed route. Should other prevailing environmental constraints dictate that the Sycamore South Segment Alternative become the preferred Cajon Pipeline alignment, a full field study should be undertaken and approved prior to issuance of any construction permits.	It is anticipated that increased importation of crude oil would likely occur through increased marine tankering under this alternative. The risk of an oil spill occurring in coastal waters would be increased and would result in significant potential impacts to the coastal marine environment.

TABLE 2-2
COMPARISON OF IMPACT FOR THE ALTERNATIVES

Cajon Pipeline	Kramer Segment Alternative	Sycamore South Segment Alternative	No Project
Air Quality			
Air pollutant emissions would result from the operation of construction equipment on- and off- site. Pipeline operation would not result in significant air emission though an accidental oil spill would result in release of hydrocarbon vapors immediately following a spill.	The Kramer Segment Alternative would result in similar impacts as the proposed project.	The Sycamore South Segment Alternative would result in similar impacts as the proposed project.	It is anticipated that increased importation of crude oil would likely occur through increased marine tankering under this alternative. This alternative would result in increased air emission from valves, flanges, and seals in operation of the harbor facility.
Noise			
This pipeline alternative would result in permanently increased community noise levels in the vicinity of the two pump stations and temporary increases in noise level as a result of pipeline construction.	The Kramer Segment Alternative would result in similar impacts as the proposed project.	The Sycamore South Segment Alternative traverses a portion of the Glen Helen Regional Park. Construction noise has the potential to temporarily impact recreational activities at this location.	The No Project alternative would result in increased tankering and alternative modes of crude oil transportation through the Los Angeles Basin. Harbor, rail and truck activities would increase at Long Beach Harbor and hence long term significant noise impacts on sensitive receptors in the Long Beach area would be anticipated.

TABLE 2-2
COMPARISON OF IMPACT FOR THE ALTERNATIVES

Cajon Pipeline	Kramer Segment Alternative	Sycamore South Segment Alternative	No Project
Visual Resources			
This pipeline alternative would alter existing views from State Route 58; would result in grading of a 70-feet right-of-way; would result in construction on visually prominent slopes through he Kramer Hills and the Cajon Pass; and could result in a loss of trees and vegetation alongside highways and other roadways.	The Kramer Segment Alternative would result in similar visual impacts to the proposed route but it would not result in any disruption to prominent slopes in the Kramer Hills.	The Sycamore South Segment Alternative would result in similar visual impacts to the proposed route.	The No Project alternative would not require any construction or improvements to existing facilities. This alternative would not have any impacts on visual resources.
Land Use			
The Cajon Pipeline Alternative would result in the development of 27.2 acres of vacant land, temporary disruption of the surrounding area, and in the event of an accidental spill in the contamination of private property and restriction of land use.	The Kramer Segment Alternative would result in similar land use impacts to the proposed route.	The Sycamore South Segment Alternative would result in similar land use impacts to the proposed route, with additional temporary disruption occurring at the glen Helen Regional Park.	The No Project alternative would result in increased use of harbor facilities at Long Beach. The increased use would be consistent with existing industrial uses and would not require any construction or improvements in other areas. No significant impacts to land uses would occur.

TABLE 2-2
COMPARISON OF IMPACT FOR THE ALTERNATIVES

Cajon Pipeline	Kramer Segment Alternative	Sycamore South Segment Alternative	No Project
Utilities			
Construction of this alternative could accidentally damage and/or disrupt service of existing utility lines, could result in collocation dangers in Cajon Pass as a result of a catastrophic event, and would be constructed adjacent to existing utilities in the USFS designated Cajon Pass Utility Corridor.	The Kramer Segment Alternative is outside designated utility corridors of the BLM, California Desert Conservation Area Plan (1980) for the first 13 miles. An amendment to the California Desert Conservation Plan would be required under a conditional use variance. The project proponent would be required to submit a request for amendment to the District Manager of the BLM California Desert District.	The Sycamore South Segment Alternative would result in utilities impacts similar to those described for the Cajon Alternative.	Under the No Project alternative, construction-related impacts would not occur. It is anticipated that increased oil importation would occur by way of marine tanker. No impacts to utilities are anticipated to occur.
Socioeconomics			
This pipeline alternative would temporarily increase population in adjacent cities, increase permanent employment in Adelanto, increase demand for permanent housing by 16 percent in Adelanto, and increase property tax revenues.	The Kramer Segment Alternative would require the same work force for construction and operation as the proposed project. No additional impacts would occur.	The Sycamore South Segment Alternative would require the same work force for construction and operation as the proposed project. No additional impacts would occur.	Under the No Project alternative, construction-related impacts would not occur. It is anticipated that increased oil importation would occur by way of marine tanker. No impacts to utilities are anticipated to occur.

TABLE 2-2
COMPARISON OF IMPACT FOR THE ALTERNATIVES

Cajon Pipeline	Kramer Segment Alternative	Sycamore South Segment Alternative	No Project
Transportation and Circulation			
Pipeline construction within road right-of-ways may result in interruption of traffic flow and result in construction across rural roads in the San Bernardino National Forest.	The Kramer Segment Alternative would result in similar impacts to transportation and circulation as for the proposed project.	The Sycamore South Segment Alternative would result in two additional crossings of the I-15. Additional consultation with Caltrans would be required if this alternative was selected. Remaining traffic impacts would be as discussed for the proposed project.	The No Project alternative would result in an increase in the importation of crude oil from outside of the United States. No construction would be required as the existing harbor facilities would be utilized. Scheduling at the port facilities would be required to accommodate additional tankering but no significant impacts would be anticipated.
Cultural and Paleontological Resources	Construction using the Kramer Alternative could impact the two identified sites, SBR-5361 and SBR-5362. McKenna has recommended that both these sites be considered sensitive/significant and monitoring be conducted, should the alternative be implemented. Should evidence of the site(s) be re-identified, evaluation of the remains in compliance with Section 106 can be completed at that time.	As previously stated, no cultural investigations have been yet undertaken for this alternative. Should other prevailing environmental constraints dictate that the Sycamore Segment Alternative become a portion of the Cajon Pipeline alignment, in compliance with Section 106 a full records search and field survey should be undertaken and approved prior to the issuance of any construction permits.	The No Project alternative would result in increased importation of crude oil from outside of the United States. It would not require any construction but would result in increased usage of the marine tankering facilities in Long Beach Harbor. No impacts to archaeological or paleontological resources would occur.

TABLE 2-2
COMPARISON OF IMPACT FOR THE ALTERNATIVES

Cajon Pipeline	Kramer Segment Alternative	Sycamore South Segment Alternative	No Project
System Safety and Reliability			
For this pipeline alternative three spills ranging from 9.3 barrels to 1,000 barrels are projected to occur.	The Kramer Segment Alternative would have the same spill risk as calculated for the proposed project.	The Sycamore South Segment Alternative would have the same spill risk as calculated for the proposed project.	Under the No Project Alternative, crude oil would be delivered to the Los Angeles refineries by marine tankers. As shown in Table 1-1, marine tankers are subject to spills approximately 20 times as frequently as pipelines.

3.0

Alternatives Including the Proposed Action

---

3. ALTERNATIVES INCLUDING THE PROPOSED ACTION

3.1 INTRODUCTION

The purpose of the proposed Cajon Pipeline is to provide a transportation link for heavy crude oil from the Santa Barbara Channel and the San Joaquin Valley to the Los Angeles Basin. The Cajon Pipeline Company proposes to accomplish this by constructing a 142-mile insulated, heavy oil pipeline with a maximum capacity of 180,000 barrels per day (BPD) from 12-Gauge Lake, California, to the Los Angeles crude oil terminals in Carson and Long Beach. Crude oil would be delivered to a new terminal, the Cajon Terminal, at 12-Gauge Lake by the existing All-American Pipeline. Twelve-Gauge Lake is located 27 miles west of Barstow, California. A pump station at the Cajon Terminal would pump crude oil southward through a 20-inch diameter insulated pipeline to a booster pump station at Adelanto. There it would be pumped again, over Cajon Pass and into the Los Angeles Basin. A location map of the project is shown in Figures 3-1(A) and 3-1(B). A detailed route map is attached as Appendix A.

3.2 PROPOSED PROJECT (BLM PREFERRED ALTERNATIVE)

3.2.1 Project Components

The proposed Cajon Pipeline project would consist of the following major components:

- 142 miles of 20-inch outside diameter buried steel pipeline;
- a crude oil storage area with a maximum 750,000 barrel capacity;
- two pump stations and one pressure reduction station; and,
- an office/warehouse and control center.

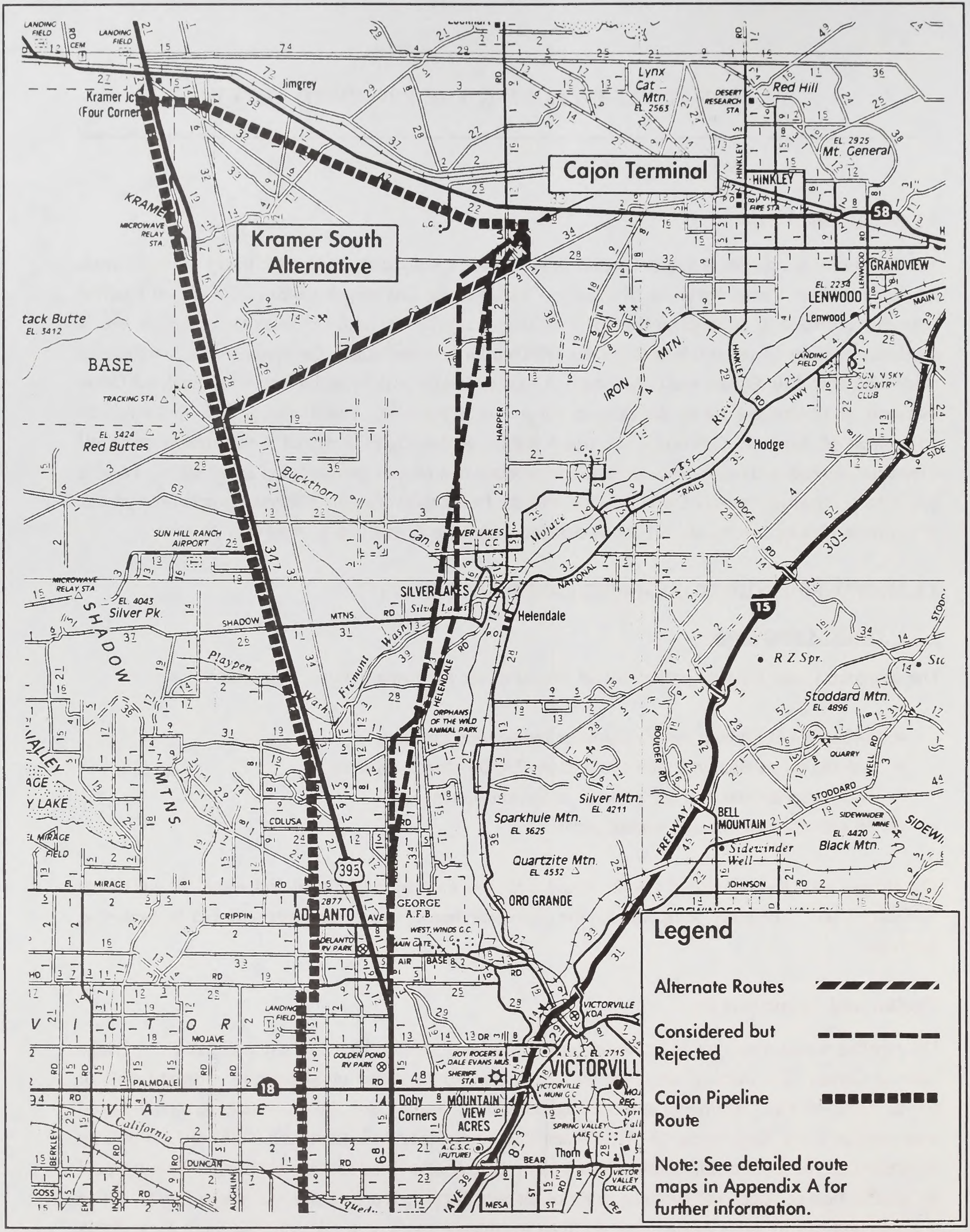
The storage area and one pump station would comprise the Cajon Terminal and would be located at 12-Gauge Lake. The other pump station, the office/warehouse, and control center would be located at Adelanto.

Pipeline and Appurtenances

The pipeline would consist of 142 miles of buried, insulated, steel-welded pipe extending from 12-Gauge Lake to Carson. For most of the route, the pipeline would be within or adjacent to existing public or private rights-of-way. Beginning at the storage area at 12-Gauge Lake, the pipeline route would extend west parallel to the State Route 58 (SR-58) and then south along U.S. Route 395 (U.S. 395) to the city of Adelanto. The route would continue south along Baldy Mesa Road to Valencia Street where it would go west to Beaver Street and continue south on Beaver Street to Yucca Drive. At Yucca Terrace Drive it would turn east to Baldy Mesa Road, and then re-continue south. It would continue south along Baldy

Project Location

Figure 3-1 (A)



Note: See detailed route maps in Appendix A for further information.

Source: Automobile Club of Southern California, November, 1990.

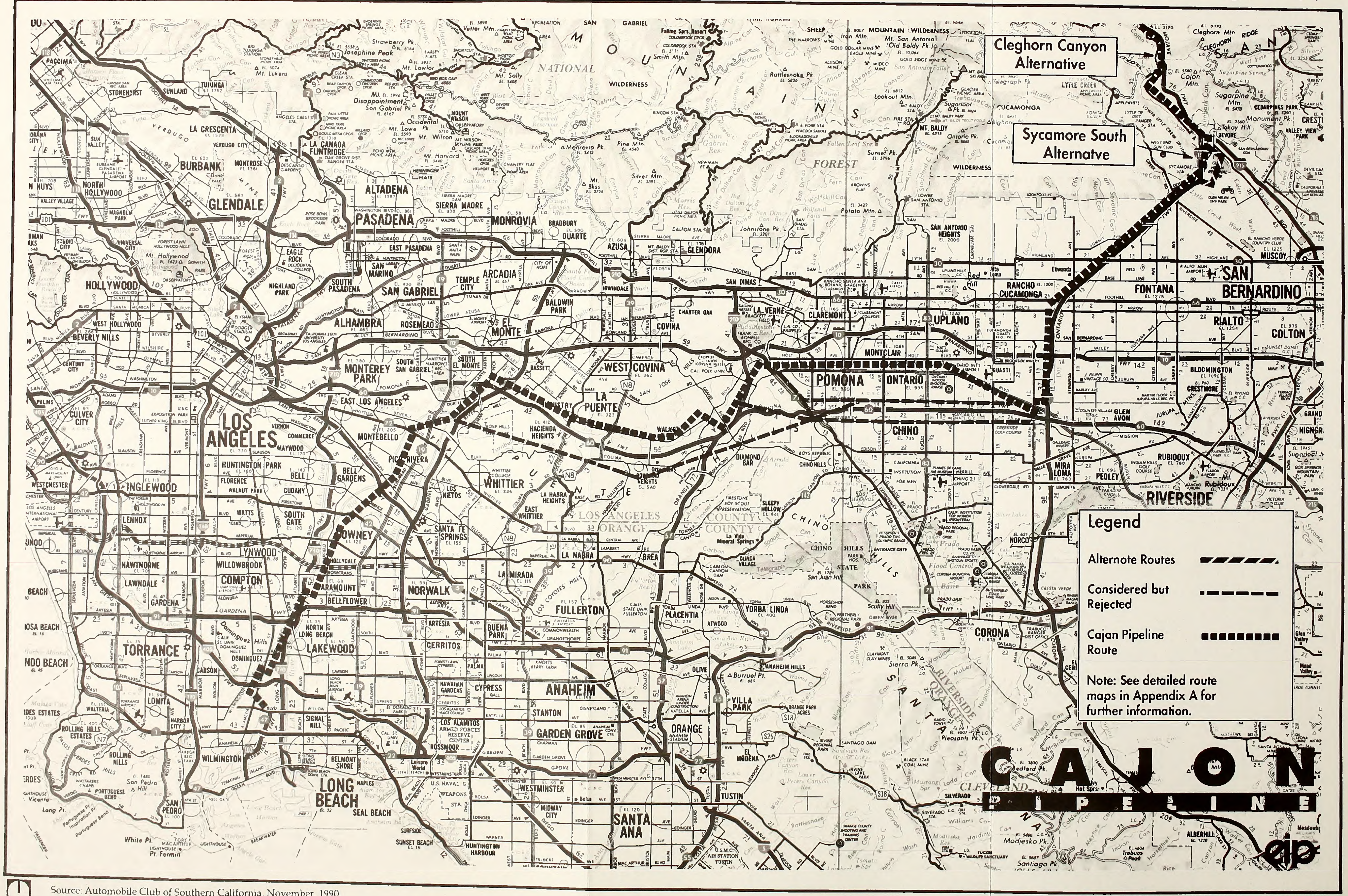
No Scale

90439

eip

Project Location

Figure 1 (B)


Cleghorn Canyon Alternative
Sycamore South Alternatve
Legend
Alternote Routes ▬ ▬ ▬
Considered but Rejected – – – –
Cajon Pipeline Route ■■■■■■
Note: See detailed route maps in Appendix A for further information.
CAJON PIPELINE
eip
No Scale

Source: Automobile Club of Southern California, November, 1990.

90439

Mesa Road through Cajon Pass, crossing under Interstate 15 (I-15) at two locations and continuing south along Old Cajon Boulevard to the separation of I-15 and Interstate 215 (I-215). It would cross Highway 10 east of Ontario Airport to Mission Boulevard. It would then follow Mission Boulevard northwest to State Street and continue on First Street to Vernon and Pomona Boulevard to the City of Industry. In the City of Industry it would follow various streets to the San Jose Flood Control Channel. Following the channel, it would cross Interstate 605 (I-605) and the San Gabriel River and then along the San Gabriel River it would cross State Route 60 (SR-60). The route would follow various streets, crossing Rosemead Boulevard (State Route 19), and passing around the Whittier Narrows Dam. The route would follow flood control channel access roads along the Rio Hondo Channel and the Los Angeles River to just north of Interstate 405 (I-405) at which point it would follow the Union Pacific Railway right-of-way to the westside of the Long Beach Freeway (I-710) southerly to Carson Street. The route would proceed along Carson Street to Alameda Boulevard. The route would then turn south along Alameda Boulevard to the Dominguez Channel and would continue along the channel to the GATX Carson Terminal. A pressure reduction station is necessary to reduce remaining pressure induced by the descent of the pipeline through the Cajon Pass. The Sycamore Canyon Pressure Reduction Station would be located on the west side of Interstate 15 at M.P. 73.0. The fenced site will be 150 feet by 80 feet containing a receiving and launching trap along with a control valve and a control facility. Foundations would be required and the site would be lighted. The height of all facilities would be less than 10 feet. Electricity would be provided to the site by Southern California Edison.

The pipeline would cross 23 streams or canals, the largest being the California Aqueduct, Cajon Wash, and the Los Angeles River. Stream crossings are listed in Section 4.2. The pipeline would lie within or cross numerous streets, highways, and railroad tracks. The pipeline's relationship to these transportation facilities is described in detail in Section 4.10.

The pipeline would be protected from corrosion by a cathodic protection system whereby an electrical current is passed through the pipe to counteract the electrical currents created when the metal surface contacts the ground. Corrosion protection test stations would be located at approximately five mile intervals along the pipeline route.

The pipeline would be equipped with 46 valves with a maximum separation of 6.7 miles. Valve locations are listed in Table 3-1 and shown on the pipeline longitudinal profile in Figure 3-2. It includes 36 main line valves (gate or block valves) which prevent the flow of oil in either direction when activated, and ten check valves to prevent the reverse flow of oil. Check valves automatically prevent backflow whereas gate valves may be remotely or manually operated.

The pipeline would lie within a permanent right-of-way varying in width between 10 and 50 feet. The permanent right-of-way would be narrower in congested urban areas and wider in undeveloped areas. Right-of-way markers as shown in Figure 3-3 would be installed along the pipeline route in accordance with California State Fire Marshall's regulations.

TABLE 3-1
VALVE LOCATIONS ALONG CAJON PIPELINE ROUTE

Milepost	Location	Distance Between Valves (miles)	Block Valve (B)	Check Valve (C)	Method of Operation	Linefill (BBLS)
0.0	12-Gauge Lake Heat Station	0.0	B		R	N/A
0.2	Cajon Terminal (inlet)	0.2	B		R	385
0.4	Cajon Terminal (discharge)	0.2	B		R	385
4.0	Milepost	3.6		C	A	6,932
7.6	East side of unnamed Fault	3.6	B		R	6,932
8.9	West side of South Lockhart Fault	1.3		C	A	2,503
14.0	U.S. 395/Kramer Junction	5.1	B		R	9,821
19.4	North side of unnamed Fault & Spring Fault	5.4	B		R	10,398
21.0	South side of Spring Fault	1.6		C	A	3,081
23.2	North side of unnamed Fault	2.2	B		R	4,236
26.6	Milepost	3.4	B		R	6,548
30.3	North side of Blake Ranch Fault	3.7	B		R	7,125
31.8	South side of Blake Ranch Fault	1.5		C	A	2,888
37.3	Milepost	5.5	B		R	10,591
41.3	Milepost	4.0		C	A	7,703
45.3	Adelanto Station and Maintenance Facility (inlet)	4.0	B		R	7,703
45.6	Adelanto Station and Maintenance Facility (discharge)	0.3	B		R	578
48.4	Milepost	2.8		C	A	5,392
51.75	North side of East Branch California Aqueduct	3.3	B		R	6,355
51.85	South side of east Branch California Aqueduct	0.2		C	A	385
55.2	Milepost	3.3		C	A	6,355
60.1	I-15 and summit grazing allotment	4.9	B		R	9,436
62.8	SR-138 and Baldy Mesa Road	2.7	B		R	5,200
63.6	North side of Cleghorn Fault & I-15	0.8	B		R	1,541
66.3	North side of San Andreas Fault	2.7	B		R	5,200
73.0	North side of San Jacinto Fault (Sycamore Canyon P.R. Station)	6.7	B		R	12,902
74.5	North side of the Lytle Creek Fault	1.5	B		R	2,889
77.4	North side of Rialto-Colton Fault	2.9	B		R	5,584
83.0	I-15/Day Creek	5.6	B		R	10,784
85.2	I-10/Day Creek	2.2	B		R	4,237
87.0	Day Creek	1.8	B		R	3,466
92.1	Mission Boulevard	5.1	B		R	9,821

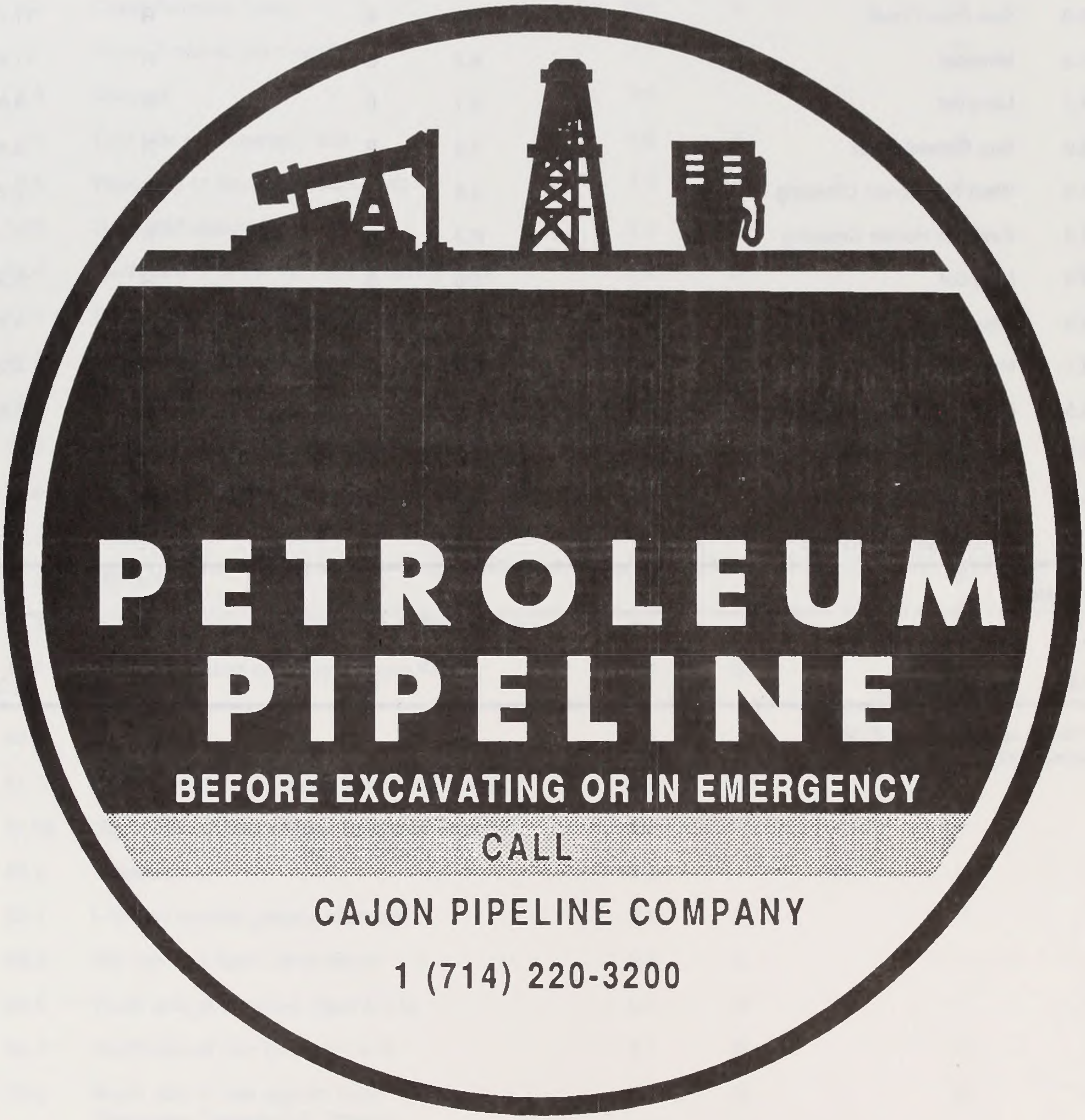
TABLE 3-1
VALVE LOCATIONS ALONG CAJON PIPELINE ROUTE

Milepost	Location	Distance Between Valves (miles)	Block Valve (B)	Check Valve (C)	Method of Operation	Linefill (BBLS)
96.9	State Street	4.8	B		R	9,243
103.0	San Jose Creek	6.1	B		R	11,746
109.2	Milepost	6.2	B		R	11,939
114.3	Milepost	5.1	B		R	9,821
119.2	San Gabriel River	4.9	B		R	9,436
124.0	West Rio Hondo Crossing	4.8	B		R	9,243
124.3	East Rio Hondo Crossing	0.3		C	A	
126.9	Milepost	2.6	B		R	5,584
129.9	Milepost	3.0	B		R	5,777
132.1	Milepost	2.2	B		R	4,237
135.5	East of Los Angeles River Crossing	3.4	B		R	6,547
135.8	West side of Los Angeles River Crossing	0.3		C	A	
139.0	Milepost	3.2	B		R	6,740
141.9	GATX Carson Terminal	2.9	B		R	5,585
Hynes Lateral						
136.8	Hynes Lateral Tie in	--	B		R	
138.5	Hynes Terminal	1.7	B		R	3,274

R = remotely operated from Adelanto
A = automatically operated (applies to all check valves)

Right-of-Way Markers

Figure 3-3

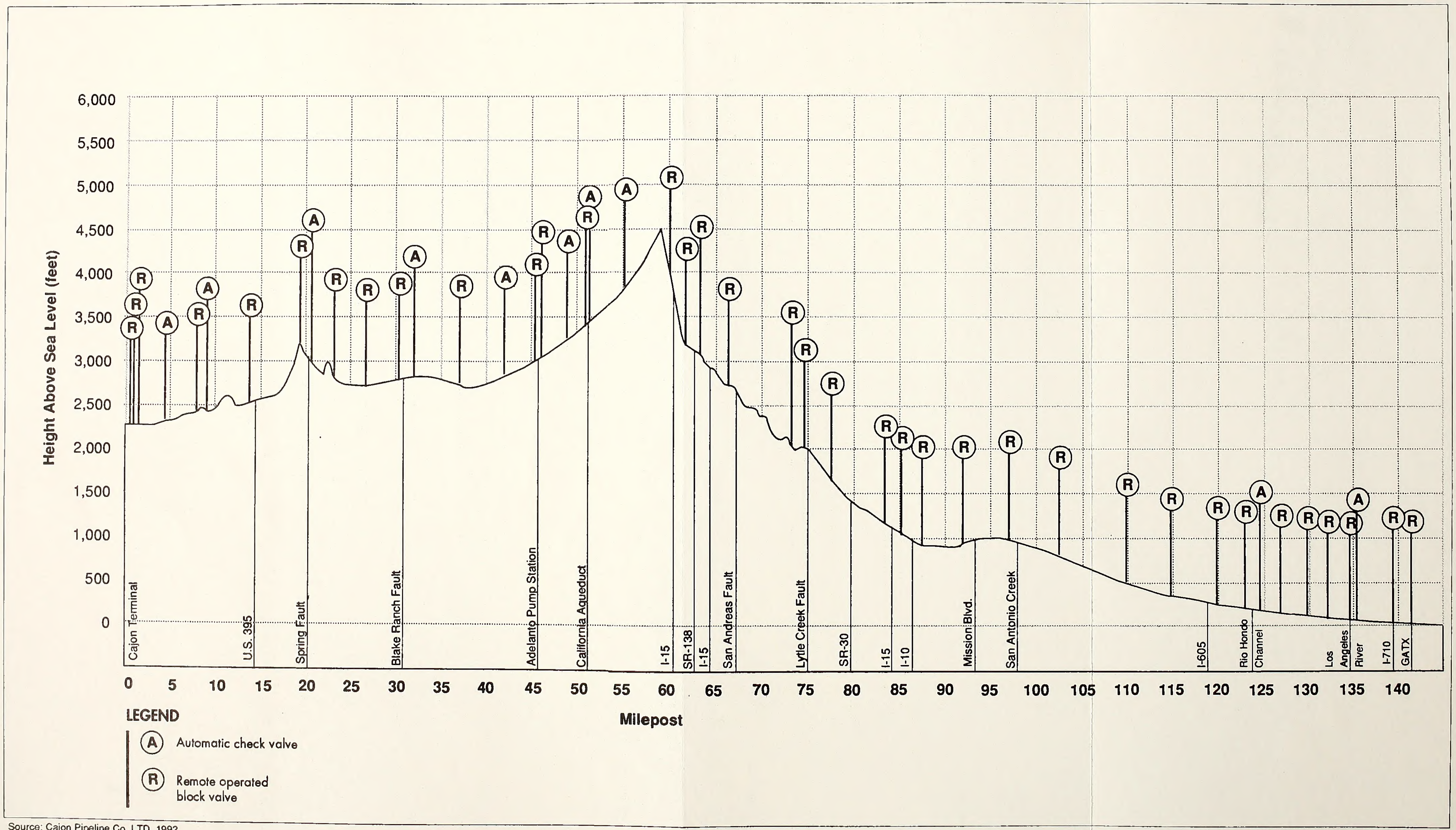


Source: Cajon Pipeline Company

90439

Longitudinal Profile

Figure 3-2



Source: Cajon Pipeline Co. LTD, 1992

Cajon Terminal

Cajon Terminal would be located adjacent to the All-American Pipeline (AAPL) 12-Gauge Lake Heater Station (AAPL) site and would consist of a 3,000 brake horse power (BHP) pump station and a 750,000 barrel crude oil storage area. The terminal would occupy 25 acres of land which includes 2.5 acres for the pump station, and the remainder for crude storage. A plot plan of the terminal is shown in Figure 3-4. The pump station would consist of three electric pumps, mounted on concrete pads, a control building, and an electrical substation. The control building would house the electrical switchgear required to control the electrical substation and the pump motors. It would also house motor control equipment for station valves and other control and communication equipment. The control building would be approximately 40 feet long, 10 feet wide and 10 feet high.

The storage area would consist of five insulated, steel, double-sealed, floating roof tanks. Each tank would have a capacity of 150,000 barrels and would be 48 feet high and 153 feet in diameter. The tanks would be built on compacted earthen pads over an impermeable barrier. The tanks would be surrounded by an approximately six foot high dike which would be capable of containing 125% of the maximum volume of all tanks in the event of failure. The area within the dike would be graded to drain to a catchbasin equipped with a gate valve. The entire terminal site would be leveled, compacted, graveled, and fenced. A 50-foot by 100-foot terminal office/lab/warehouse building would be built along with a helicopter pad.

Adelanto Pump Station and Maintenance Center

The Adelanto Pump Station would occupy an approximately 2.2-acre site in the City of Adelanto. Facilities at the pump station would include a 3,000 BHP booster pump station, offices, an office/warehouse, and a control center. A plot plan of the station is shown in Figure 3-5. The pump station would consist of three electric pumps, mounted on concrete pads, an electrical substation, and a control center. The control center would be housed, together with an office and warehouse in a single 5,000-square foot building. The site would be leveled, compacted, and graveled. A fence would surround the entire site.

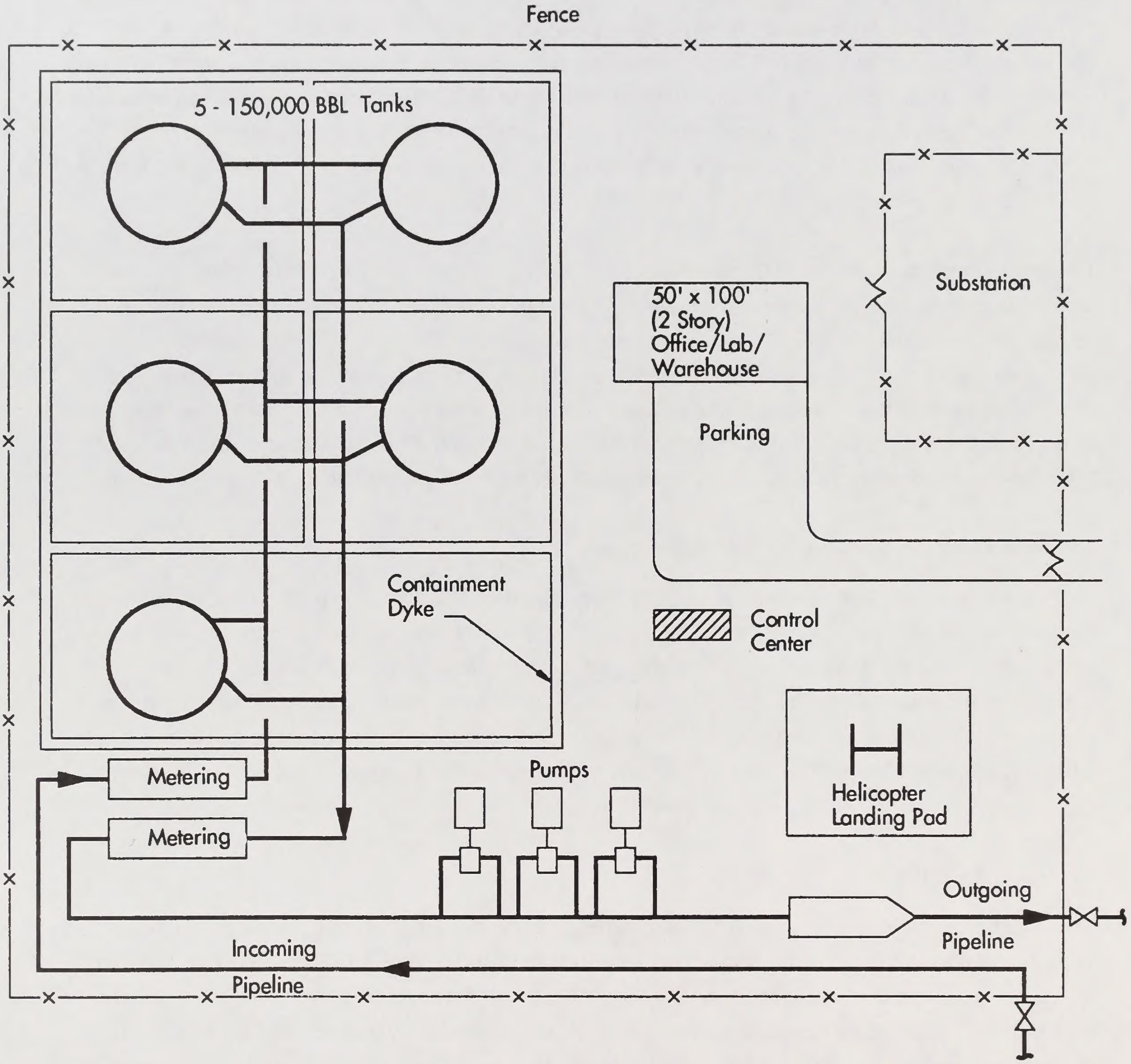
Upstream Facilities

The Cajon Pipeline would tie in to AAPL downstream of the 12-Gauge Heater Station return manifold. Thus the existing AAPL heater station would be utilized to heat the crude oil. There would be no change in operation or permitted capacity at the 12-Gauge Heater Station due to this connection to the Cajon Pipeline. The 12-Gauge Heater Station consists of three 30-million BTU/Hr direct fired gas heaters. These are permitted and installed in parallel. Two heaters are used in normal operations with the third used as a standby. The heaters are designed to heat the oil to a maximum of 160°F.

A "circulation line" would be provided between the Cajon Terminal tank manifold and the AAPL heater manifold. In the "unusual event" that stored oil required re-heating (this would be oil in storage over 6 days), a booster pump would circulate oil to the AAPL heater manifold—through the heater (or heaters) and return to the Cajon station manifold for shipment into the pipeline or for routing back to storage.

Plot Plan of Terminal

Figure 3-4

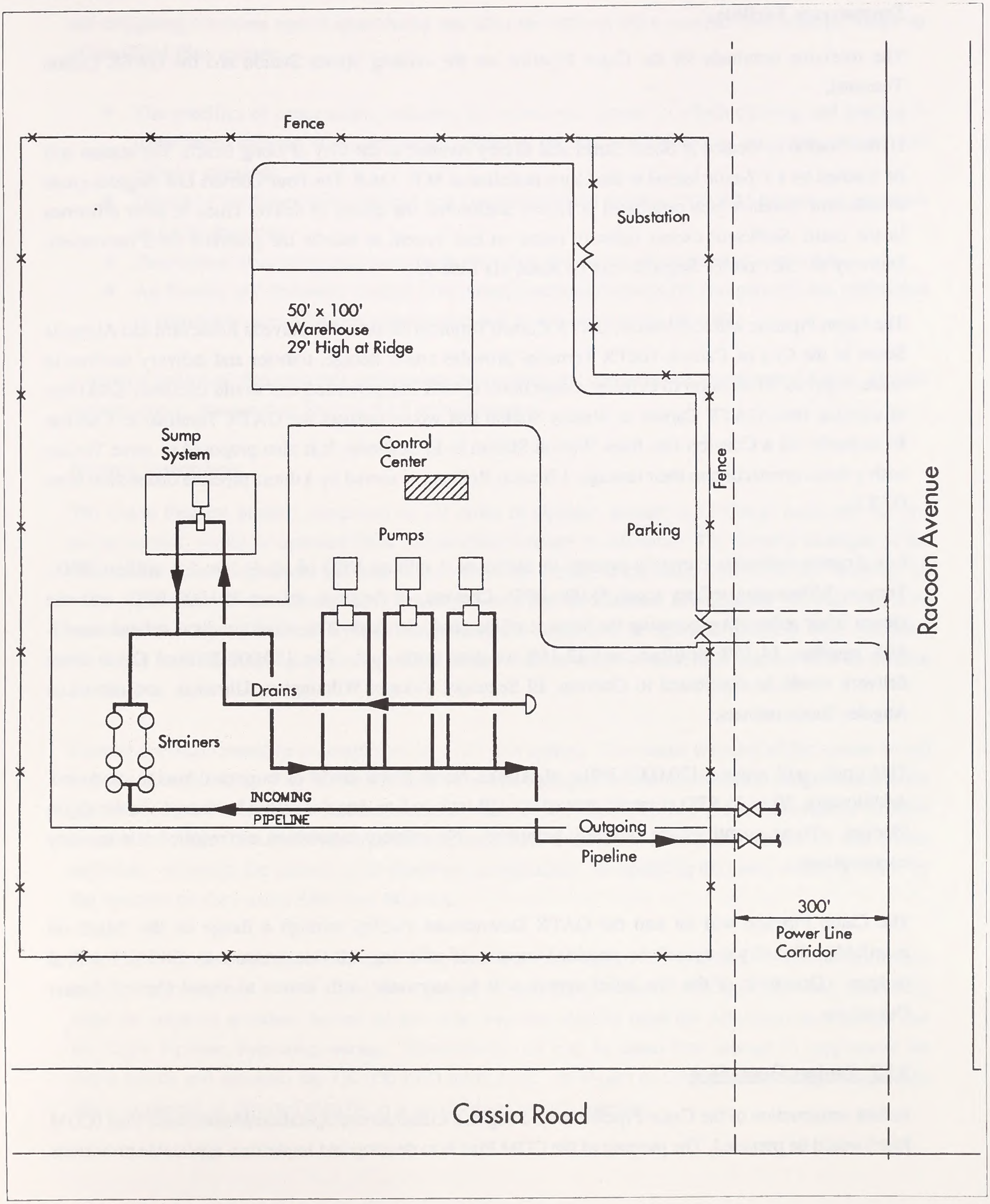


Source: Cajon Pipeline Co. LTD, August 27, 1992

90439

Plot Plan of Adelanto Station

Figure 3-5



Source: Cajon Pipeline Co. LTD, June 9,1992

No Scale

90439

Downstream Facilities

The receiving terminals for the Cajon Pipeline are the existing Hynes Station and the GATX Carson Terminal.

Hynes Station is located at South Street and Cherry Avenue in the City of Long Beach. The station will be reached by a 1.7-mile lateral to the Cajon mainline at M.P. 136.9. The Four Corners Los Angeles crude distribution system which originated at Hynes Station has the ability to deliver crude to most refineries in the basin. Sufficient excess capacity exists on this system to handle the potential OCS movement. Delivery to Chevron, El Segundo can be made via Line 93.

The Cajon Pipeline will terminate at GATX Carson Terminal located at Sepulveda Boulevard and Alameda Street in the City of Carson. GATX Terminal provides crude storage, transfer and delivery services to crude shippers. In addition to existing connections, GATX has permitted and would construct 3,400 feet of pipeline from GATX Carson to Watson Station that would connect the GATX Terminal to Chevron El Segundo via a Chevron line from Watson Station to El Segundo. It is also proposed to serve Texaco with a direct connection to their tankage. Ultramar Refinery is served by a direct pipeline connection from GATX.

Los Angeles refineries currently process in excess of 1 million BPD of oil (1.1 to 1.2 million BPD). Texaco, Wilmington refines about 85,000 BPD: Chevron, El Segundo refines 250,000 BPD; with the eleven other refineries processing the balance of the crude demand. The major products refined are 45-48% gasoline, 14-16% distillate, and 12-14% aviation grade fuel. The 150,000 BPD of Cajon crude delivery would be distributed to Chevron, El Segundo; Texaco, Wilmington; Ultramar, and other Los Angeles Basin refiners.

This crude will replace 120,000" BBLs of Alaska North Slope crude or imported foreign crude oil. Additionally, 30 to 35 BPD currently moved by unit train to Los Angeles would be moved via the Cajon Pipeline. These quantities are currently permitted. No refinery expansions are required nor are they contemplated.

The Cajon Pipeline will tie into the GATX Downstream Facility through a flange on the "black oil manifold". Relief valves will be provided capable of relieving full line pressure to GATX Terminal tankage. Operation of the line relief system will be automatic with alarms to signal Control Center Operations.

3.2.2 Project Operations

Before construction of the Cajon Pipeline would begin, a Construction/Operation/Maintenance Plan (COM Plan) would be prepared. The purpose of the COM Plan is to develop and implement applicable provisions and mitigating measures agreed upon during and after the NEPA/CEQA process. The principle elements of the COM Plan include:

- The specifics of construction including the extent and manner in which clearing and grading is undertaken, location of staging areas, ditching, construction techniques and road, stream, and railway crossings.
- Details of the Supervisory Control and Data Acquisition System (SCADA) for remote operation and leak detection.
- Description of maintenance procedures including the timing of testing and inspection.
- An Erosion and Sediment Control Plan which describes methods for revegetation and restoration of disturbed areas following construction and in the event of an oil spill.

A general outline of plan elements with respect to operation and maintenance are presented below. Project construction is discussed in Section 3.2.3 of this chapter.

Normal Operations

The Cajon Pipeline project, comprised of 142 miles of pipeline, storage at 12-Gauge Lake and the two pump stations, would be operated from a main control center in Adelanto. The General Manager of the system, the Chief Dispatcher, and nine others would be located at the main control center. Another 15 to 20 operations and maintenance staff members would also be stationed at Adelanto. No staff would be maintained at Cajon Terminal. System components are designed to be operated remotely from Adelanto. Staff may start and stop equipment, open and close valves or set flow rates, after contact with the control center.

Remote operation would be accomplished by a SCADA system. The master terminal of the system would be located in Adelanto. The SCADA system would be equipped with software that is programmed to the pipeline design. The system would automatically scan for and receive operating data from remote terminal units at the Cajon Terminal, Adelanto Station, the pressure reduction station and the GATX and Hynes terminals. Although the system could shutdown automatically, all operating decisions would be made by the operator on duty using data from SCADA.

The Cajon Pipeline system is designed to operate at a flow rate of 150,000 BPD. Normal operations would require the use of two of the three pumps at each pump station. At Cajon Terminal, depending upon the shipping schedule, heated oil would be switched directly from the All-American Pipeline into the Cajon Pipeline, bypassing storage. Alternatively, oil may be taken from storage to supplement the direct stream and maintain the 150,000 BPD throughput. At Hynes or GATX the arriving oil would be taken to storage or diverted directly to a connecting carrier's pipeline.

Maintenance and Leak Detection

Maintenance centers would be located at Adelanto and at the Cajon Terminal. Maintenance crews assigned to the Adelanto Pump Station would conduct all required routine inspections, maintenance, and emergency repairs. Monitoring procedures to be used by Cajon include aerial pipeline patrol, line rider patrol, corrosion monitoring (cathodic protection), monthly testing of all station and terminal protective devices and inspection of all mainline valves every six months and continuous volume measurement using the SCADA system.

Weekly aerial patrol flights or surface patrols would cover the pipeline route from the Cajon Terminal to the Ontario Airport (M.P. 90). The pilot making the inspection flight would report any observed construction activity or any abnormal condition to the nearest maintenance facility. A ground line patrol would check the line from Ontario Airport (M.P. 90) to the Hynes and GATX Terminals. This patrol would monitor for any surface evidence of leaks or construction activities that are encroaching on the pipeline right-of-way. Excavators requesting a line location through the Underground Service Alert (USA) or the Cajon office would be met by Cajon line location personnel to ensure that any excavation in the vicinity of the pipeline would not damage it.

The pipeline would be hydrostatically tested before being put into service and then every five years, in accordance with California regulations. Prior to hydrotesting, an internal inspection pig would be launched into the line to record wall thickness, flat spots, dents, etc. as it travels through the line. The readout would indicate any areas of internal or external corrosion, that can then be repaired or replaced prior to any leak being realized. A launching trap would be installed at the Cajon Terminal and a receiving trap would be installed at the GATX terminal with both a launcher and receiver at the Sycamore Canyon Pressure Reduction Station (M.P. 73).

The pipeline would be equipped with instrumentation that would allow early detection of a leak. Pipeline pressure and flow rate and the volumes of oil entering and leaving the system would all be monitored continuously. Warning of a leak would be provided by pressure deviation, flow rate deviation and/or volumetric imbalance. All three of these indicators are effective in providing rapid warning of a large leak. Monitoring of the volume entering and leaving the system is the most effective method for detecting small leaks. Volume balance and pressure variation detection systems currently in use are designed to detect a 150 to 200 barrel per hour (BPH) loss; i.e., approximately 3.35% of total flow capacity within a 150 to 180 second time frame. Smaller losses in the range of 3 to 5 BPH would be detected within a twelve hour time frame. A major rupture would be detected within 15 seconds.

Oil Spill Contingency Plan

The Cajon Pipeline Company will prepare an Oil Spill Contingency Plan (OSC Plan) pursuant to the U.S. Environmental Protection Agency's Oil Pollution Prevention Regulation, Title 40, Article 112. The OSC Plan outlines the equipment and operational procedures utilized by the spill response teams in preventing, reporting, and containing oil spills and the subsequent restoration activities which may be required. The principal components of the contingency plan are summarized below:

- Designation of the members of the oil spill task force within the company, their responsibilities, and communication procedures.
- A listing of specific response procedures as a function of spill size and the characteristics of areas potentially affected, such as streambeds and areas of special biological significance.
- An inventory of the spill containment and cleanup equipment at the site and at proximate locations that could be mobilized in the event of an emergency.
- Training procedures for personnel including a description of methods for recovering spilled oil and disposing of oil-contamination material.
- A listing of the locally and regionally available manpower and contractors providing specialized cleanup equipment and expertise.
- A discussion of oil spill and fire prevention techniques and equipment incorporated into the design of the facility and routine monitoring practices for detection of pollution or equipment malfunction.

The plan would require approval by EPA, BLM, and the State of California before startup of the pipeline system.

3.2.3 Project Construction

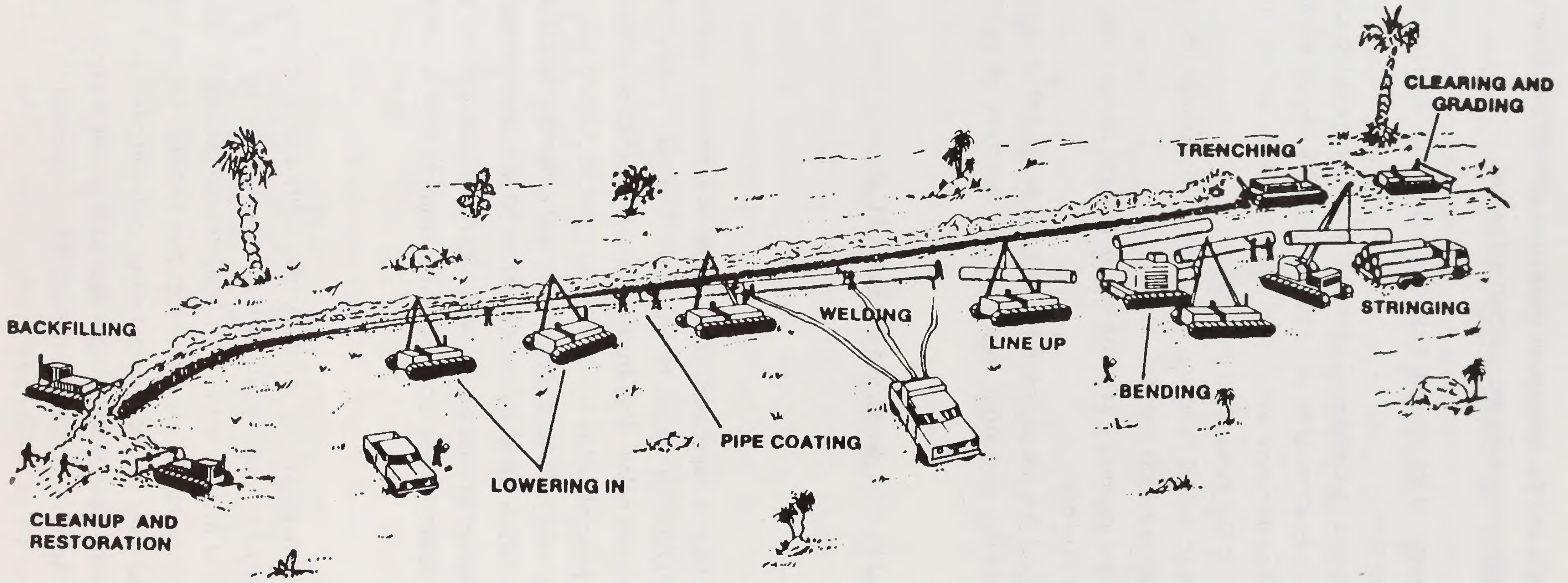
Once the Cajon Pipeline project is approved, and before construction begins, a Construction/-Operation/Maintenance Plan (COM Plan) would be prepared. A general outline of plan elements with respect to construction are presented below. Construction would be preceded by surveying and right-of-way acquisition. The right to proceed would be obtained by grant of right-of-way, purchase, permit or franchise. Disturbance due to construction of the pipeline will generally be constricted to a zone of approximately 70 feet in width, which would include the 10- to 50-foot-wide permanent right-of-way. In some areas, particularly at crossings of streams, highways, railroads, and utilities, a construction width greater than 70 feet may be necessary. These areas and other required work spaces are identified below.

Pipeline Construction

Pipeline construction would be undertaken by several teams, referred to as construction spreads. Each pipeline construction spread would be made up of several units, each having a separate function. The units will be organized to proceed with the work in the following general order: clearing and grading the right-of-way; hauling and stringing the line pipe; ditching; pipe bending, line-up and welding; applying protective coating; lowering and tying-in; backfilling; testing; and right-of-way clean-up and restoration. A sketch of a typical cross country pipeline construction spread is shown in Figure 3-6. A similar sketch for a street crew is shown in Figure 3-7. Each of the activities performed by a construction spread is described below.

Typical Construction Spread

Figure 3-6



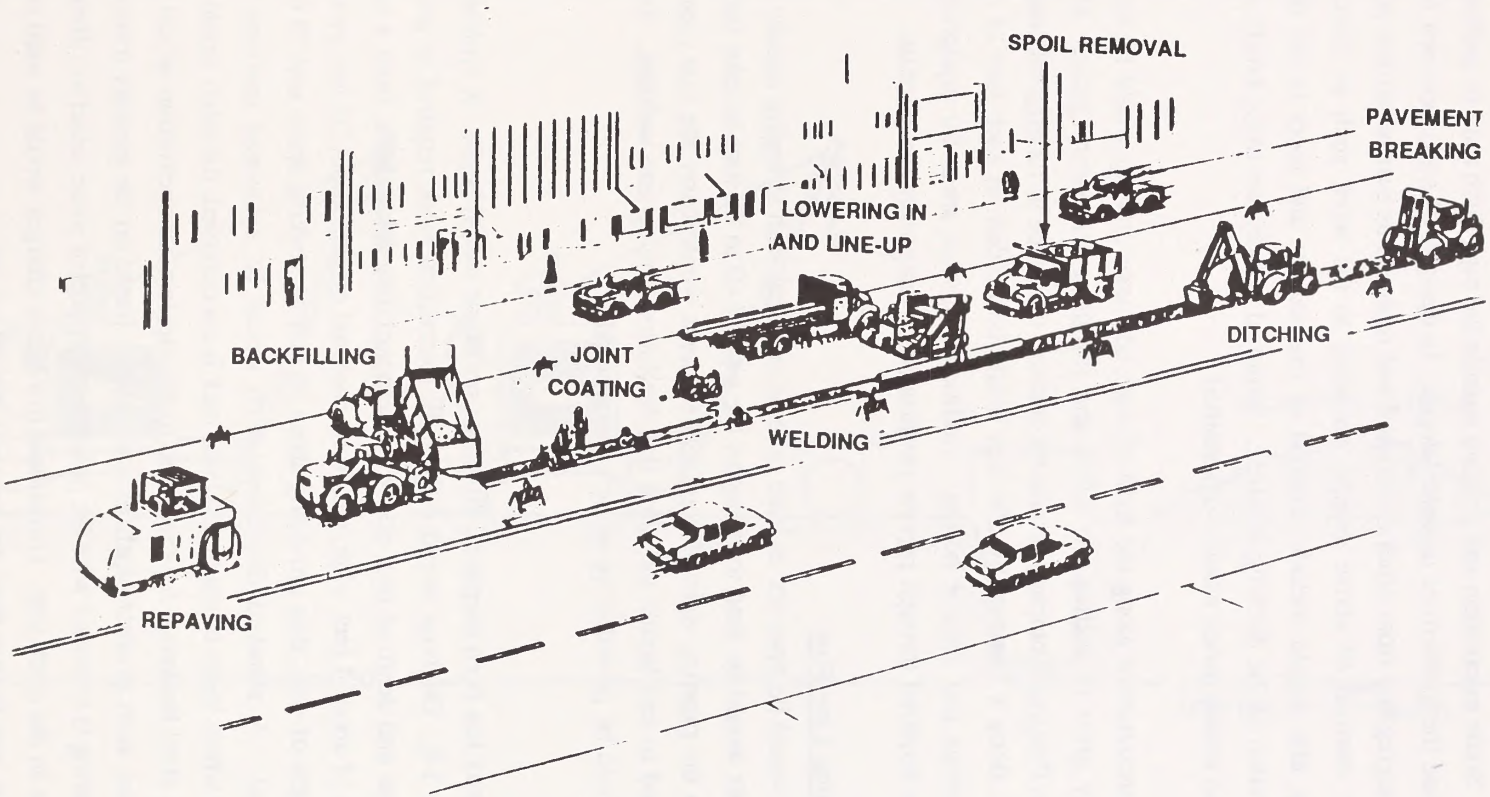
SCALE CONDENSED FOR ILLUSTRATIVE PURPOSES

Source: US Bureau of Mines, US Bureau of Labor Statistics, American Petroleum Institute and Federal Energy Administration

90439

Typical Street Crew

Figure 3-7



Clearing and Grading the Right-Of-Way

Grading and cut-and-fill excavation would be performed in such a way as to minimize effects on natural drainage and slope stability. Upon completion of construction, the ground surface would be restored to the original grade. Some excavation and grading outside the pipe ditch may be performed to increase the stability and decrease the gradient of unstable slopes. In designated areas between M.P. 0 and M.P. 74, top soil would be segregated from other ditch spoil and replaced as part of surface restoration. Clearing would include the removal of above ground obstacles to the work such as trees, brush, crops, and boulders. Clearing also would include removal of tree stumps and roots in the ditch line that could interfere with operation of the ditching machine. Removal of only the trees, brush, and crops necessary for construction and maintenance would be permitted.

Where fences are encountered along the right-of-way, adequate bracing would be installed at each edge of the right-of-way prior to cutting the wires and installing temporary gates. Upon completion of construction, Cajon Pipeline Company would reconstruct the fence to its original condition or better. An area 100 feet back along a frontage by 250 feet would be needed on each side of roads, railroads and minor stream crossings that require boring. Additional storage areas for equipment, pipe, and other materials would be acquired through private permission or temporary use permits.

Hauling and Stringing Line Pipe

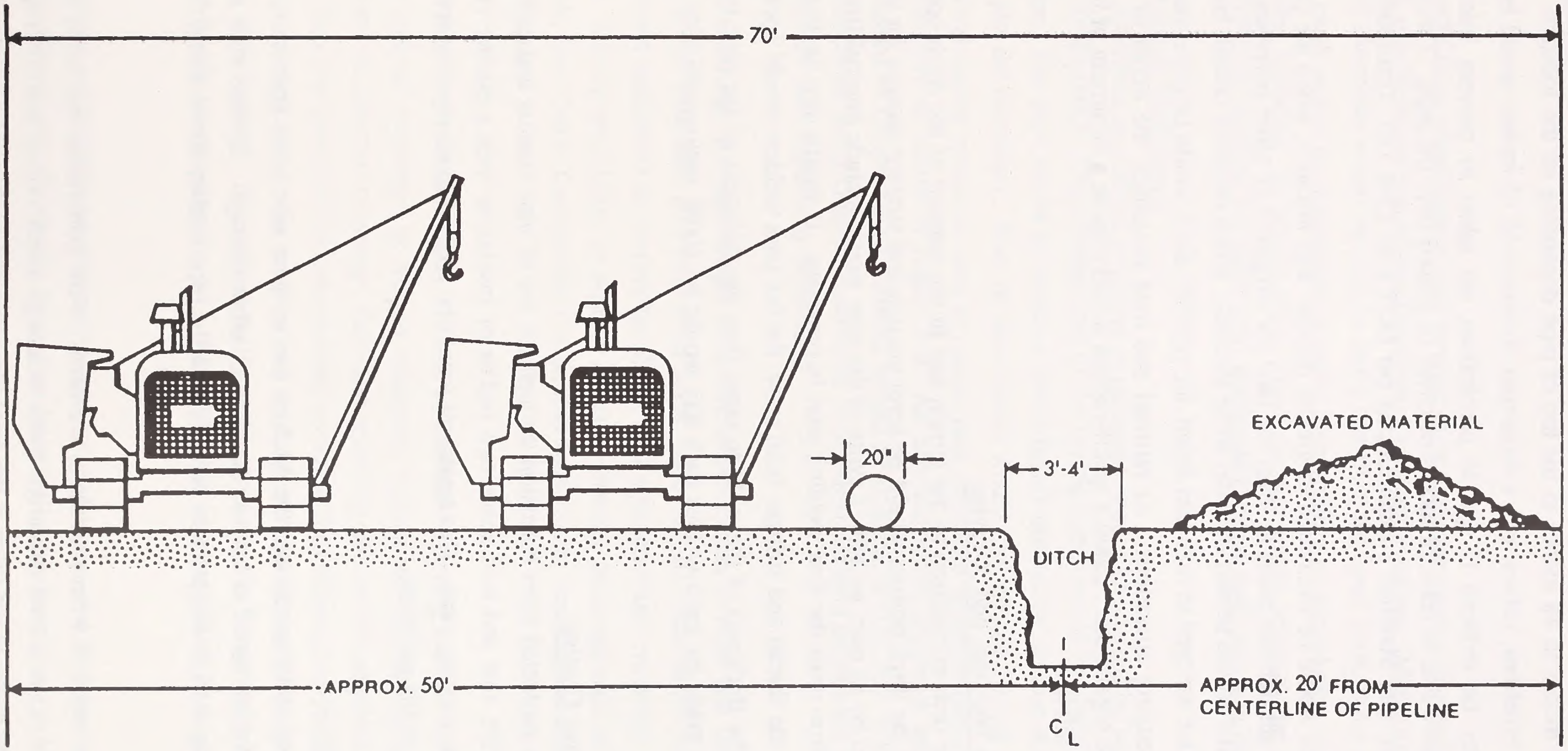
The pipeline ditch would be open for as little time as practical with stringing usually preceding ditching. Pipe-stringing trucks would be used to transport the pipe in 40 to 80 foot lengths from a shipment point or storage yards to the pipeline right-of-way. Side booms would carry the line pipe from the stringing trucks and lay it end to end beside the ditch line for future line-up and welding. Turnaround areas for stringing trucks would be provided by using existing roads.

Ditching

Once the right-of-way has been prepared, ditching operations would begin. A typical ditch cross section is shown in Figure 3-8. Ditching would include all excavation work required to provide a ditch of the specified dimensions and depth of pipe cover. A standard dimension ditch, from a minimum of about 3 feet to a maximum of about 4 feet wide, would be centered on line about 20 feet away from one edge of the 70-foot-wide right-of-way, thus providing about 50 feet of working space and 20 feet of area in which to place ditch spoil. A standard dimension ditch would be excavated mechanically with ditching machines. In areas where loose or unconsolidated rock is encountered, the ditch would be excavated using backhoes and clam shell buckets. An exception to the mechanical excavation would be hand-digging to locate buried utilities, such as other pipelines and cables. Based on the geology traversed by the pipeline route, no major blasting is expected with the possible exception of some selective, directionally-controlled blasting of boulders in the ditch line. Directional low-grade charges would be used so that shock effects would not propagate any further than the immediate right-of-way.

Typical Ditch Cross-Section

Figure 3-8



Source: Cajon Pipeline Co. LTD, 1990

90439

The depth of the ditch would vary with the conditions encountered. Normal pipeline construction places lines at a depth of 30 inches to 48 inches to the top of pipe depending on the location. When crossing over and under other pipelines, cables, etc. a minimum clearance of 12 inches would be standard. The 12-inch clearance may be reduced if special precautions are taken to prevent interference. Rock excavation would require that at least 18 inches of cover be placed over the pipe. These depths meet or exceed California State Fire Marshall's requirements per DOT's 49 CFR 195, Transportation of Liquids by Pipeline.

Occasionally, the ditch would be excavated to greater depths. For instance, when the pipeline traverses areas for which there are definite plans to level the land for irrigation or other purposes, the pipe would be buried at a depth that would permit the land to be leveled. When crossing canals, borrow ditches, or irrigation ditches that are dredged to maintain depth, the pipeline ditch would be excavated to a depth that would permit safe dredging operations. At railroad and road crossings, the depth of the pipe would conform to appropriate regulations. Cajon's specifications would require a minimum of four feet of cover of the pipe at borrow ditches.

Pipe Bending, Laying Welding, and X-raying

The pipeline would be bent to conform to the terrain and fit the contour of the ditch both vertically and horizontally. Usually the ditch bottom would be level enough and straight enough for the pipe to fit by natural flexure induced by its own weight. Laying of the pipe would include internal lineup for welding, and holding it in position until the first welding pass is complete. It would then be lowered onto skids or blocks. Following the lineup and stringer bead crew, the hot pass welders would apply the remaining weld passes to bring the thickness of the weld to more than the thickness of the pipe by approximately 1/16 inch. All welds made by each welder each day would be 100% radiographically inspected in all locations.

Insulation and Protective Coating

The pipeline would be protected from corrosion through the use of pipe coating and cathodic protection. After removal of all dirt, rust and mill scale, two inches of insulation with a double vinyl outer wrap, would be applied at the coating yard. This treatment would be applied to all pipeline sections, including field joints after field welds are made.

Lowering and Tying-In

The pipe would be lifted and lowered into the ditch by two or more side-boom tractors spaced so that the weight of unsupported pipe would not cause buckling or other damage. Cradles with rubber rollers or padded slings would be used so the tractors can lower-in the pipe as they travel along the ditch without damage.

Tie-in welds would be required whenever there is a break in the continuous operation of the main-line pipe crews. This would occur at road crossings, water crossings, block valves, and other special locations. Tie-in welds are usually made in the ditch at the final elevation and each weld requires pipe handling for line-up, cutting to exact length, pipe cleaning and coating, and backfilling in addition to normal welding and weld inspection.

Backfilling

A variety of backfilling procedures would be used to perform the work effectively and economically and to comply with specifications regarding protection of pipe and coatings. Motor graders, angle dozers, and modern backfill machines would be used to move dirt from the spoil bank to the ditch. Where specified, the backfilled earth would be compacted to avoid later settling in accordance with the specifications for various interested agencies. In certain areas where damage might occur to the pipe coating, protection would be provided by padding the ditch with Rockguard, clean sand, or earth backfill.

Special Construction Techniques

In most cases, roadbeds supporting roadway or railroads, would be crossed by boring a hole horizontally from one side to the other. The cutting head of the boring auger would be slightly larger than the casing pipe or line pipe. The pipe would be installed immediately behind the cutting head as it advances. Bore and reception pits are necessary. Bore pit dimensions would typically be 10 feet wide by 15 feet long by 8 feet deep. Steel casing would be used to encase road crossings where required by federal, state, local, or railroad authorities as shown in Figure 3-9. All affected roads, highway, and railroad crossings are listed and discussed in Chapter 4.10. Boring would be utilized at U.S. 395, I-15, I-10, State Route 71, and major intersections along Ontario Boulevard, First Street, Artesia Boulevard, Long Beach Boulevard, Del Amo Boulevard and Sepulveda Boulevard.

For submerged crossings, the pipe would be buried in the stream or river bed (as shown in Figure 3-10) at a depth below the probable 100-year scour level, based on 100-year storm calculations. This would require specialized equipment to prepare the ditch. All planned water crossings are listed and discussed in Chapter 4.2. Boring would also be utilized at major channel crossings such as Los Angeles Aqueduct, Etiwanda Creek, Day Creek, Cucamonga Creek, San Jose Creek, San Gabriel River, Compton Creek and Dominguez Channel.

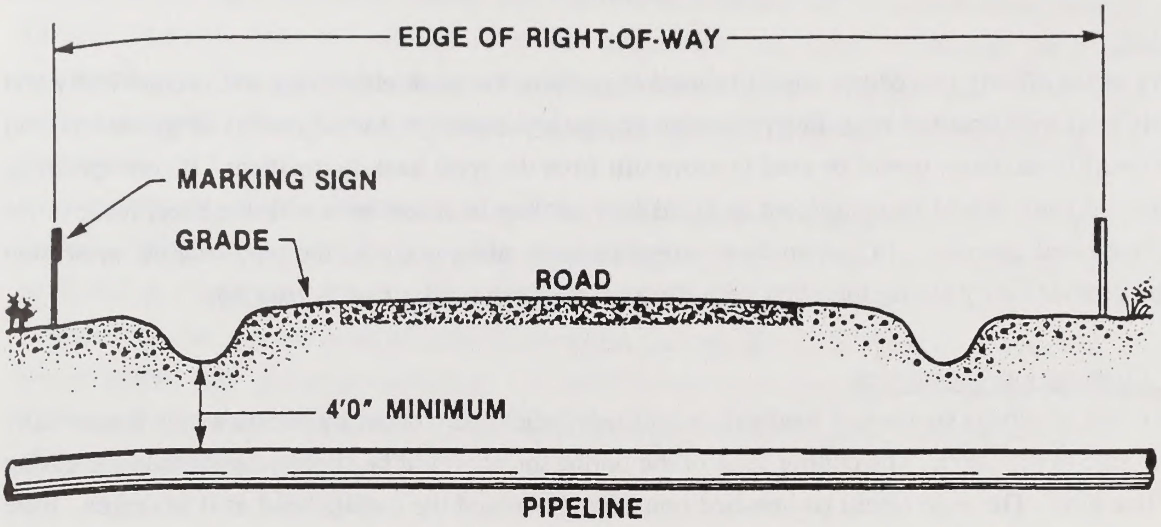
Directional drilling, as shown in Figure 3-11, is an alternative boring method for river, stream crossings, highway, road and rail crossings, as well as vulnerable habitat and riparian areas. It eliminates the need to dredge or open cut selected crossings. Bore and receiving pits are not required, and the depth of cover is also greater than that attainable by conventional methods, thus eliminating the need for concrete coating to increase pipe weight. There is no pipeline settlement. Directional drilling can reduce the project execution time significantly. Directional drilling would be used in construction on an extreme slope in Cajon Pass (M.P. 59), in crossing the I-15 (M.P. 63), and crossing the Los Angeles River (M.P. 136).

Testing

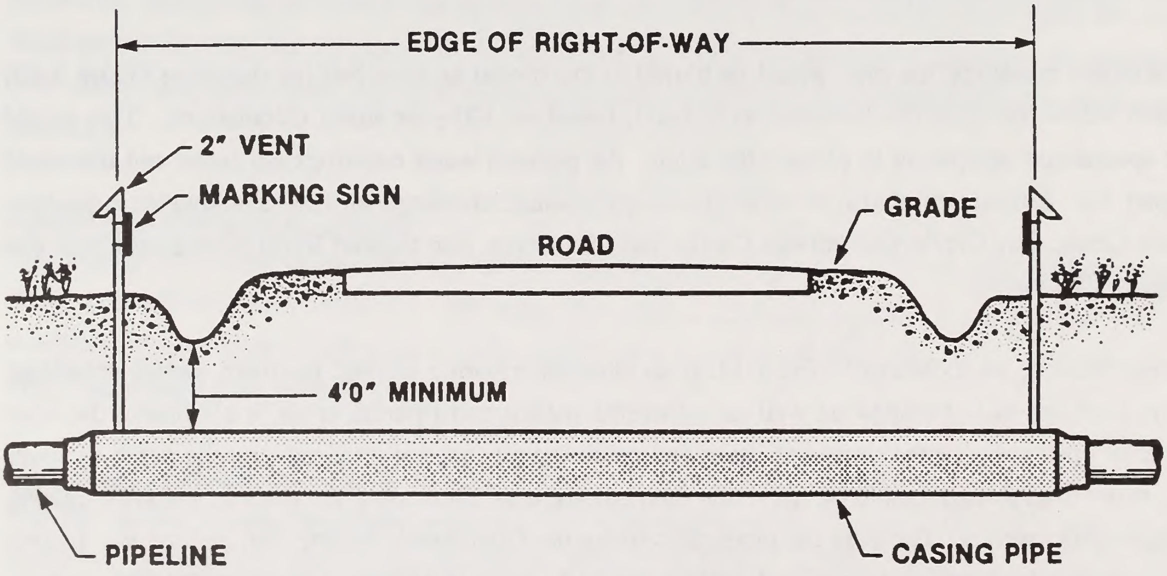
The entire pipeline would be hydrostatically tested to a minimum of 125 percent of maximum operating pressure in compliance with California State Fire Marshall's requirements.

Typical Road Crossing

Figure 3-9



UNCASED ROAD CROSSING



CASED ROAD CROSSING

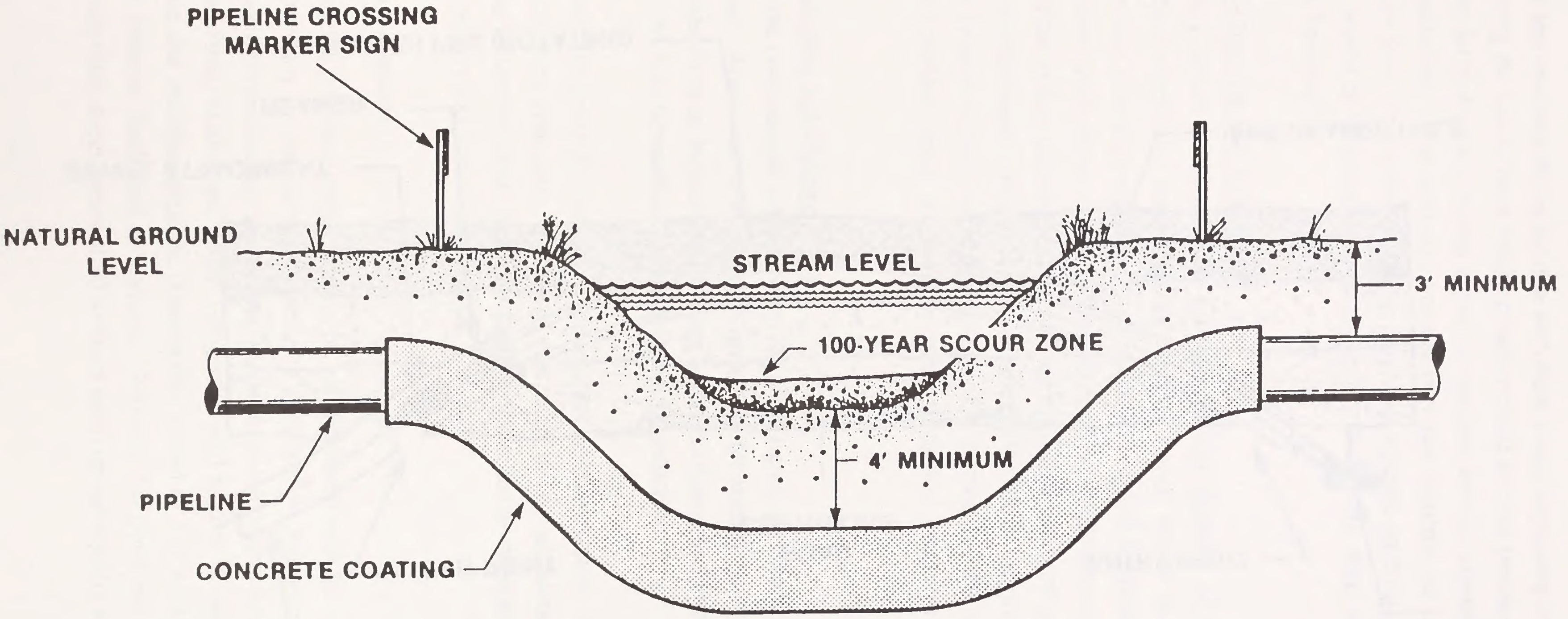
NOT TO SCALE

Source: Cajon Pipeline Co. LTD, 1990

90439

Typical River Crossing

Figure 3-10

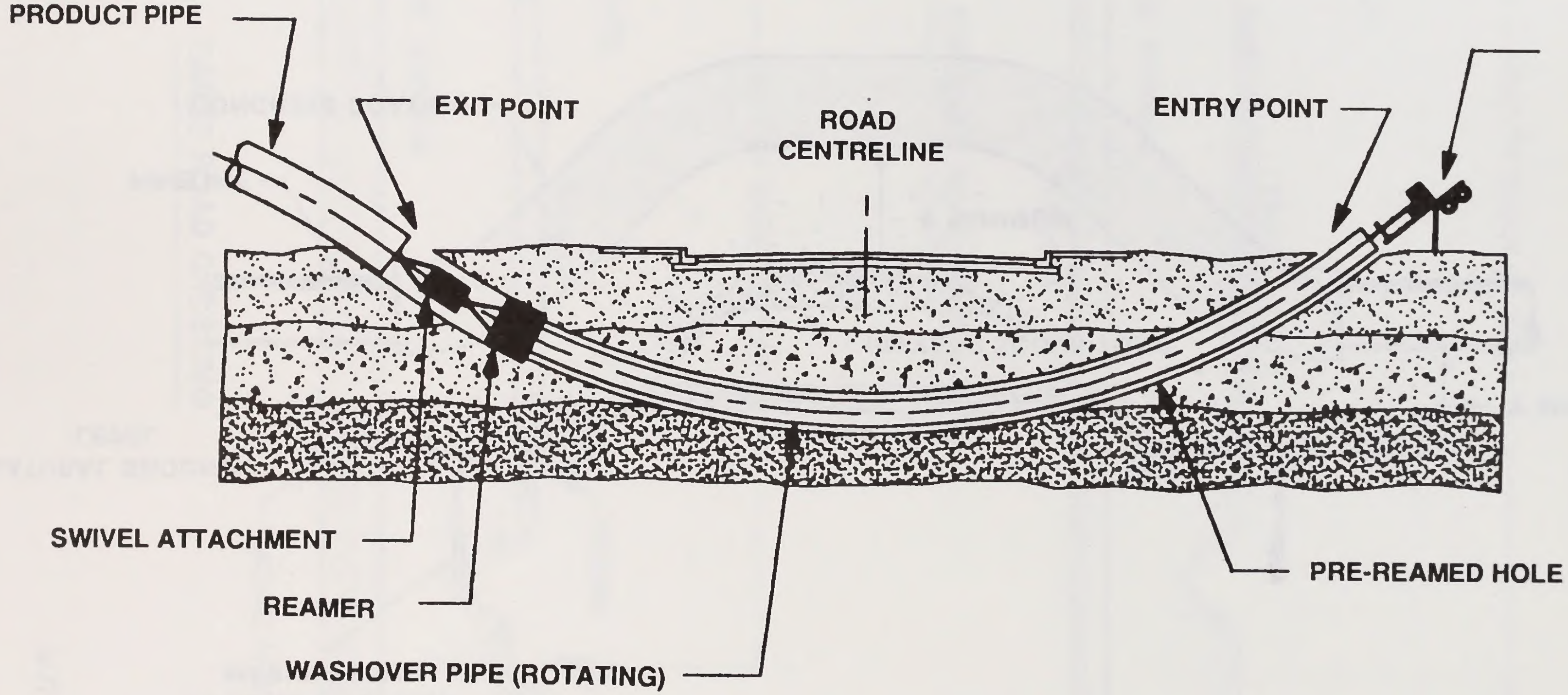


NOT TO SCALE

Source: Cajon Pipeline Co. LTD, 1990

Directional Drilling Profile

Figure 3-11



The hydrostatic test involves filling the line with fresh water, increasing the pressure by means of a special pump, pressurizing the test sections until a predetermined internal pressure is achieved and retaining it for 24 hours. Water for hydrostatic testing would be obtained through agreements consistent with local, state, and federal regulations. The estimated amount of water required for testing of the pipeline and tanks would be 24 acre feet. This water would be reused as separate sections of the pipeline system are tested. The test water would be disposed of in accordance with federal, state, and local agency requirements at GATX Carson Terminal.

Right-Of-Way Clean-Up and Restoration

The right-of-way would be cleaned up by removal and disposal of construction debris and surplus materials. Where necessary, the backfilled pipeline trench would be compacted along new pipeline segments. Markers showing exact locations of pipelines would be installed at road and fence crossings. Further restoration procedures would be determined by preconstruction conditions, land use plans, requirements of the owner, clearing techniques, and the maintenance program for the right-of-way. During routine aerial reconnaissance, which would continue for the life of the project, the applicant would monitor the success of erosion control and revegetation. The purpose of the monitoring program would be to quickly identify problem areas, so that appropriate mitigative measures may be employed to correct the problem.

Construction Staging and Storage Areas

The 70-foot-wide construction work zone includes the trench and work space, a vehicle passing lane and a stockpile zone. Additional work space is necessary for staging, storage and off-loading areas. These areas are anticipated to be located at 12-Gauge Lake, Adelanto, and Fontana. No staging areas would be located within the San Bernardino National Forest boundaries.

Contractor yards are generally located in the vicinity of construction. Selection of location is generally up to the construction contractor, but would not result in any additional areas of new land disturbance. Vehicles would be serviced daily along the pipeline route, but no equipment maintenance or fueling would be performed within 500 feet of any streams.

Construction Personnel

Construction of the proposed project would be accomplished with the use of several construction teams, working concurrently on the various portions of the pipeline and terminal system. The total workforce expected to be employed during construction of the proposed project would be 227 persons. Construction at the Adelanto Pump Station and Cajon Terminal would require 12 and 30 workers respectively. Cajon proposes to use one mainline pipeline construction spread of 125 workers from 12-Gauge Lake through Cajon Pass to Mission Boulevard in Pomona. Between that point and the Los Angeles Terminal areas, Cajon would use three street crews of 20 workers each, spread equally along the remaining pipeline route.

Construction Schedule

Prior to construction, the major activities associated with the project would be ROW confirmation, ROW acquisition for those rerouted portions of the pipeline, surveying, permit acquisition, and franchise authorization where necessary (Figure 3-12). Excavation and encroachment permits would be obtained, as required, for crossing railroads, highways, streets, rivers, aqueducts, flood control channels, and various other facilities.

Construction is expected to occur over a 12 month period (Figure 3-12). Construction would progress in urban areas at an average rate of 0.25 miles per spread per day, and in rural areas at an average rate of 1.5 miles per day. Two to three days would be required to cross a roadway intersection by either boring or trenching.

The expected duration of construction at any one location is no more than 5 days, except for construction of the terminal and stations. Construction activities would typically occur between the hours of 6:00 a.m. and 5:00 p.m. on weekdays and between 8:00 am and 6:00 pm on Saturday and Sunday, except where city staffs have requested otherwise to alleviate traffic impacts or where local noise ordinances limit the hours of allowable construction activities. Nighttime construction would be performed in commercial areas here requested by agency personnel.

3.2.4 Project Abandonment

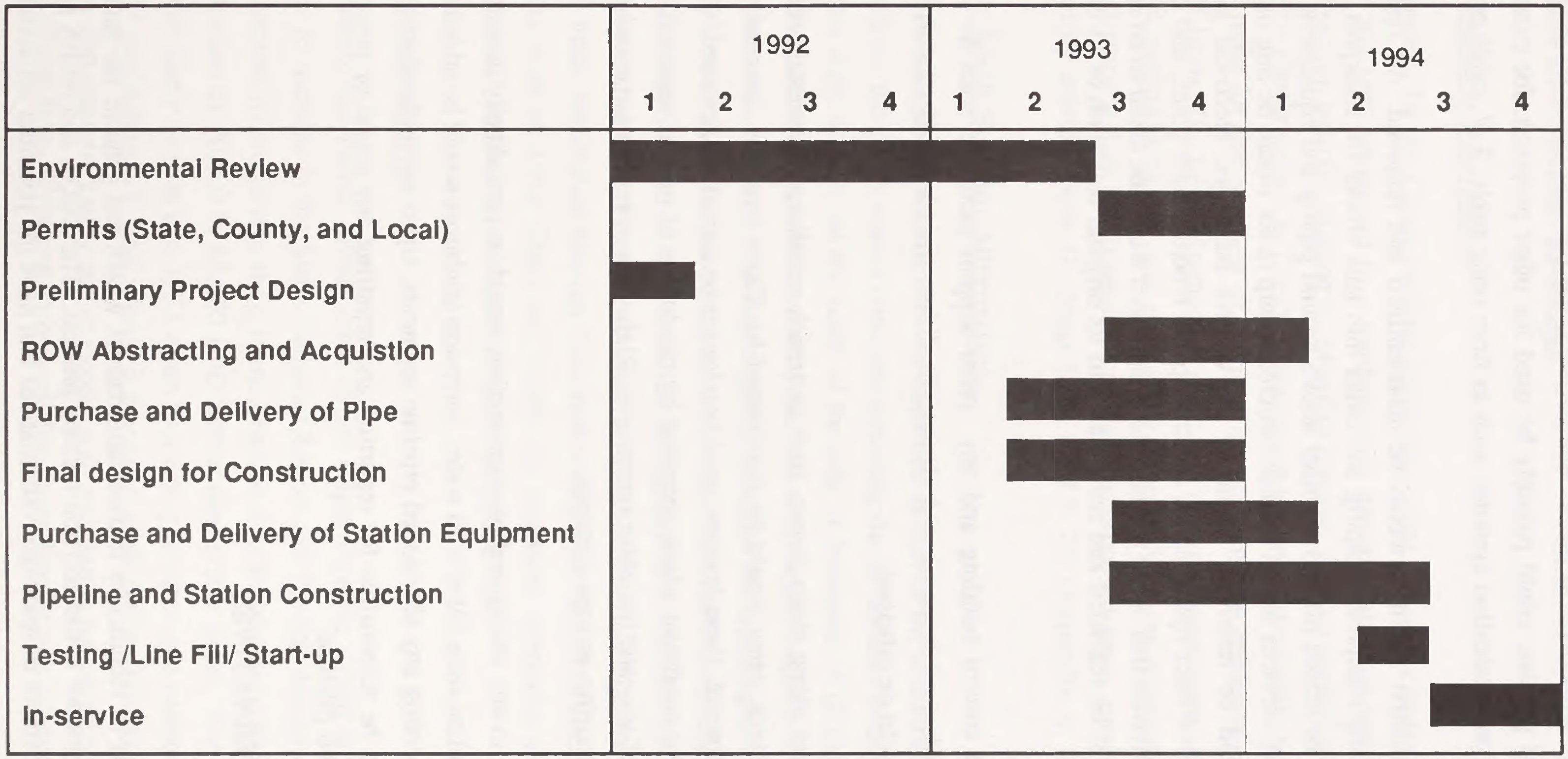
The project life of the Cajon System would depend on the availability of crude oil requiring transport to the Los Angeles Basin. Should additional reserves become available, the operational life of the facilities could be extended beyond the 30-year estimated life of the project. Lack of crude oil or other economic situations could render pipeline operation infeasible beyond the estimated year project life and could result in abandonment and disposal of all or portions of the system.

With proper maintenance, the operational life of the Cajon Pipeline goes well beyond the estimated 30-year project life. The physical assets of the system can be maintained in a standby mode for an indefinite period of time, thus extending the abandonment date in the event another use for the system is identified. All abandonment procedures would be subject to appropriate existing local, state and federal regulations in effect at that time.

In the abandonment process, the drained pipeline would be purged of crude oil by sending cleaning pigs through the line with a small volume of cutter stock. The cutter stock would be followed by squeegee pigs driven by inert gas. After purging the crude oil, additional cleaning pigs and batches of cutting stock would be run through the line to remove most of the oil from the pipe wall; however, some petroleum residue would remain after purging. Purged crude oil and cutting stock would be displaced to refineries for processing.

Project Schedule

Figure 3-12



90439

The purged pipeline would be inspected to determine overall pipeline integrity. The tie-in valves at all delivery points, receiving stations and pump stations would be sealed off and all block valves would be closed; check valves would be left intact. The purged, sealed pipeline would be filled with pressurized inert nitrogen gas and abandoned in place. Alternatively, the pipeline could be purged and filled with water. The abandoned pipeline could possibly be used for other purposes, for example, a conduit for electrical utilities or communication systems, such as fiber optic cable, T.V. cable or data circuits.

Terminal and pump station facilities would be disassembled and removed. All residual oil would be evacuated from pumping equipment, piping and tanks into tank trucks for transport. Valve connections to the pipeline would be sealed off and all other above-ground piping and equipment would be removed and/or salvaged. Utility services would be disconnected; sump tanks would be dug out and removed. All surface facilities would be removed, including the control buildings, electrical substations, satellite communication dishes or fiber optic cables, concrete pads, fencing, light poles, and containment berms. All equipment and materials that could not be sold or salvaged would be taken to an appropriate disposal site. The surface would be regraded and revegetated to its original condition or to conform with future land uses.

The maintenance and control building and any other support facilities, such as maintenance yards, communications facilities, oil response and cleanup facilities, and electrical support facilities would be taken out of service, sold or salvaged.

Erosion control features along steep slopes, such as trench stabilizers, waterbars, berms, lined ditches, channel riprap, and check dams would be maintained by Cajon over the intended service life of the features. Upon abandonment, these features would no longer be actively maintained. Cajon would restore the ROW to its original condition where specified by conditions of project approval, permit conditions, and specifics of right-of-way and franchise agreements. Right-of-way restoration could involve importation of fill, regrading, contouring and revegetation.

The inert gas pressure in any abandoned pipeline section would be periodically monitored and recharged if necessary. If the pipeline were filled with water, corrosion inhibitors would be added to the water. Cajon is responsible for inspecting any abandoned pipeline segments. Upon any indication of a loss of pipeline integrity, Cajon would be responsible for reporting and repairing any actual or potential leaks, and for repairing the abandoned pipeline.

3.3 PROJECT ALTERNATIVES

3.3.1 Introduction

A comparative analysis of technically feasible alternatives which can achieve the same objective as the proposed project is important in the decision-making process. The CEQA and NEPA process requires the identification and assessment of reasonable alternatives that have the potential for avoiding or minimizing the impacts of the proposed project. Several alternatives to the Cajon Pipeline are discussed in detail in the EIS/EIR. In the process of selecting the proposed Cajon Pipeline route a number of other alternative routes were investigated. An initial screening analysis dismissed routes with little or no potential for offering reasonable environmental advantages.

3.3.2 Kramer Segment Alternative

The original proposal for the Cajon Pipeline followed a route 130-miles in length that went south from 12-Gauge Lake and then proceeded in a southwesterly direction through previously undisturbed BLM lands, to an intersection with the existing BLM utility corridor, located parallel to U.S. 395 and which then followed the Cajon Pipeline route to Carson. Subsequent to consultation with the BLM, it was determined that a preferred route for this segment of the pipeline was one that remained within the utility corridor throughout BLM lands. The original proposed route was then relegated to an alternative for the purposes of environmental comparisons and was named the Kramer Segment Alternative. In August 1992, the project team undertook a field reconnaissance of the new proposed route, located completely within the existing BLM utility corridor from 12-Gauge Lake to M.P. 25. (Appendix A, Map 1)

3.3.3 Sycamore South Segment Alternative)

The Sycamore South Segment Alternative was identified as part of the administrative review of the Draft EIR/EIS. At that time, the USFS voiced concerns regarding the proponents ability to construct the pipeline above the Caltrans right of way, on the north of the side of Interstate 15 (I-15), adjacent to Glen Helen Regional Park. The USFS staff raised concerns about the construction impacts of pipeline trenching along a fire service access road, and they also raised questions about the topography and stability of the terrain in the area. A field review of the proposed route through this area was conducted on August 31, 1992. The Sycamore Segment Alternative was identified during this field review. This alternative would follow the proposed alignment to M.P. 73 and then cross I-15 and follow the alignment of two existing natural gas transmission lines, which pass through Glen Helen Regional Park. The alternative would then, again, cross the freeway west of Lytle Creek and match the proposed alignment at approximately M.P. 74 (Appendix A, Map 12) and continue south along the proposed route.

3.3.4 No Project Alternative

Under the No Project alternative, construction of the Cajon Pipeline would not occur. Oil production, however is likely to increase in the Santa Barbara Channel and the San Joaquin Valley in the next three to five years. Current oil production from Point Arguello is approximately 50,000 BPD and is likely to reach peak production of 70,000 to 85,000 BPD within one to two years. The Santa Ynez Unit (SYU) oil production will likely start in late 1993 when two new platforms and onshore treatment facilities are completed. SYU production will peak within a few years at 90,000 to 100,000 BPD.[1] Heavy crude oil production in the San Joaquin Valley is also expected to increase to a peak of 580,000 BPD by 1995 due to a new supply of gas from Wyoming to be used for steam flood crude production.[2]

Transportation of some of the increased quantities of crude oil from the Santa Barbara Channel and the San Joaquin Valley to the required refinery facilities could occur in the following ways:

- Via the existing All-American Pipeline (AAPL) to southern Kern County where it could transport crude to the Los Angeles area via the Four Corners Lines 63 (in a blended configuration), to the San Francisco Bay area via the Texaco line, or to Texas via the AAPL;
- Via marine tankering;
- Via tanker truck; or,
- Via rail.

Two existing pipeline alternatives - the M-70 Pipeline and the Four Corners Line 90, are described in Section 3.4 and have been selected for evaluation in this document. The AAPL in conjunction with Four Corners Line 63 could be used to transport blended crude oil to Los Angeles. However, as explained in Section 3.4 due to the limited capacity of Four Corners Line 63 to Los Angeles and the inability to handle neat crude, this alternative was eliminated from detailed analysis. The remaining existing pipeline alternatives would result in delivery of crude oil to the Gulf Coast or San Francisco Bay areas. Delivery of crude oil to the refining center in Los Angeles could then be achieved by marine tankering to Long Beach Harbor.

Alternative modes of transport (marine tanker, tanker truck and rail) were eliminated from detailed analysis due to either high spill risk, lack of feasibility or permitting problems. Generally, tankering of crude oil from Santa Barbara is permitted only on an interim basis (up to three years) and with signed, unconditional throughput and deficiency agreements with a pipeline developer. Permanent approval for tankering is unlikely to be successful due to environmental concerns. Truck and rail transportation are potential alternatives but result in high levels of environmental risk from oil spills.

For the purposes of the alternative analysis within this EIS/EIR, the most likely scenario in the case of the No Project alternative for transportation of crude oil from Santa Barbara and the San Joaquin Valley to refinery facilities would be via the AAPL to the Gulf Coast or via the AAPL in conjunction with the Four Corners Line 63 to Los Angeles and Texaco pipeline to San Francisco. However, excess refinery capacity would still be available in Los Angeles. This capacity would be filled by increased tankering of crude oil from foreign sources.

3.3.5 Project Alternatives and Route Variations Considered But Eliminated From Detailed Analysis

In arriving at the proposed route the Cajon Pipeline Company conducted a selection process which assessed a number of alternative routes for pipeline construction. Two major route variations were proposed for the northern route from 12-Gauge Lake to Cajon Pass and from Pomona to Whittier Narrows

(Alternatives #1 and #2). The preferred route was then selected from this initial feasibility analysis. Once analysis of the pipeline route was undertaken, two further areas of sensitivity were identified: the route crossing of Interstate 15 (I-15) at Crowder Canyon (Variation #1), and Whittier Narrows (Variations #2).

3.3.5.1 Routing Alternative #1

The original alignment proposed for the Cajon Pipeline was a direct route from the 12-Gauge Lake Heater Station south, parallel to Helendale Road to Silver Lakes, and then directly south to Cajon Pass (Figure 3-1(A)). This route is shorter than the preferred route but is much closer to the Mojave River. At Silver Lakes, the majority of the flow in the Mojave River is underground. In the event of a crude oil spill from the pipeline, contamination of a public water supply could occur if the oil spill plume reached the Mojave River. Due to the sensitivity of this resource, the route close to the Mojave River was rejected.

3.3.5.2 Routing Alternative #2

Various routes from Pomona to Whittier Narrows were considered (Figure 3-1(B)). Consideration was given to using Mission Boulevard and Philadelphia Street. These routes were rejected due to the large volumes of traffic which use these major thoroughfares. A route crossing the Chino and Puente hills in undeveloped lands was analyzed. However, the clearing and grading of undeveloped areas are considered more significant than undertaking construction in urban areas. This alternative was rejected due to the sensitive nature of the hills.

3.3.5.3 Routing Variation #1

The proposed route originally intended to bore beneath I-15 and emerge adjacent to the stream of Crowder Creek. Due to Forest Service concerns, further discussion was undertaken with Caltrans and a more acute angle of directional drilling was assessed to avoid outletting within the stream area. At the same time, consideration was also given to remaining on the eastern side of I-15 and trenching or boring through a steep slope to Cleghorn Canyon and thus avoiding crossing I-15 at this sensitive location (Map Sheet 10). This variation was rejected due to the steepness and instability of the slope and the potential problems for revegetation and stabilization following construction.

3.3.5.4 Routing Variation #2

The proposed route utilizes the right-of-way of Durfee Road through the Whittier Narrows Recreation Area. Due to initial concern for impacts to wildlife in the area, another potential route was investigated. This involved circumventing the Whittier Narrows Dam by Rosemead Boulevard, Gallantini Street, and Paramount Boulevard. This route variation was rejected due to the high traffic volumes on Paramount Boulevard, the significant traffic impacts which would occur during construction, and the significant construction impacts to the surrounding residential neighborhoods.

3.4 MARKETING ALTERNATIVES TO THE PROPOSED ACTION CONSIDERED IN DETAIL

3.4.1 Introduction

The objective of the proposed Cajon Pipeline is to transport up to 180,000 BPD of crude oil from the Santa Barbara Channel and the San Joaquin Valley to the Los Angeles Basin. The same objective could be met, partially or completely, in a number of other ways. Crude oil could be transported through another pipeline or it could be transported by tanker truck, rail or marine tankers.

These other alternatives are not under the jurisdiction or control of the BLM, but act under marketing forces operating within economic bounds of the crude oil refining industry. Each alternative may or may not occur. At present, crude oil is being transported to the Los Angeles region via marine tanker, rail and pipeline (Four Corners Line 63 and Mobil M-70). The marketing alternatives to the Cajon Pipeline are assessed shown diagrammatically in Figure 3-13.

Five other pipeline alternatives have been proposed. Their characteristics are summarized in Table 3-2. They include the Pacific Pipeline, the Los Padres/Angeles Pipelines, the M-70 Pipeline. the Four Corners Line 63 Pipeline and the Four Corners Line 90 Pipeline. In common with the Cajon Pipeline, the two Four Corners Pipelines and the M-70 Pipeline would rely on the existing All-American Pipeline to accomplish a portion of the transportation of crude oil. The Pacific Pipeline would transport crude oil directly from the Santa Barbara Channel to Los Angeles but could not transport oil from the San Joaquin Valley. The Los Padres/Angeles Pipelines would transport oil from the Santa Barbara Channel to the San Joaquin Valley and then on to Los Angeles.

Alternative projects to the Cajon Pipeline project discussed in detail in this EIS/EIR include the M-70 Pipeline, the Pacific Pipeline, and the Four Corners Line 90 Pipeline. The remaining alternatives — the Los Padres/Angeles Pipelines, the Four Corners Line 63 Pipeline and tanker truck, rail and marine tanker transport — were thought to be less likely or less promising and are not discussed in detail. The reasons those alternatives were eliminated from further consideration are discussed at the end of this section.

3.4.2 M-70 Pipeline

The existing M-70 Pipeline is a proprietary, heated crude oil pipeline which is part of Mobil's San Joaquin Valley pipeline system. It begins at Mobil's Lebec Station in Kern County and extends 92 miles to Mobil's Torrance Refinery in the Los Angeles Basin. The existing pipeline, originally installed in 1916 and modified many times, varies in size along its route. It has segments 10, 12 and 16 inches in diameter and operates at a capacity of 63,500 BPD. The system includes four pumping and heating stations located at Lebec, Newhall, Saticoy and Slauson and 21 isolation valves. Each pump station is equipped with three 900 BHP electric pumps. The route of the pipeline and the location of the pump stations are shown in Figure 3-14.

Figure 3-13

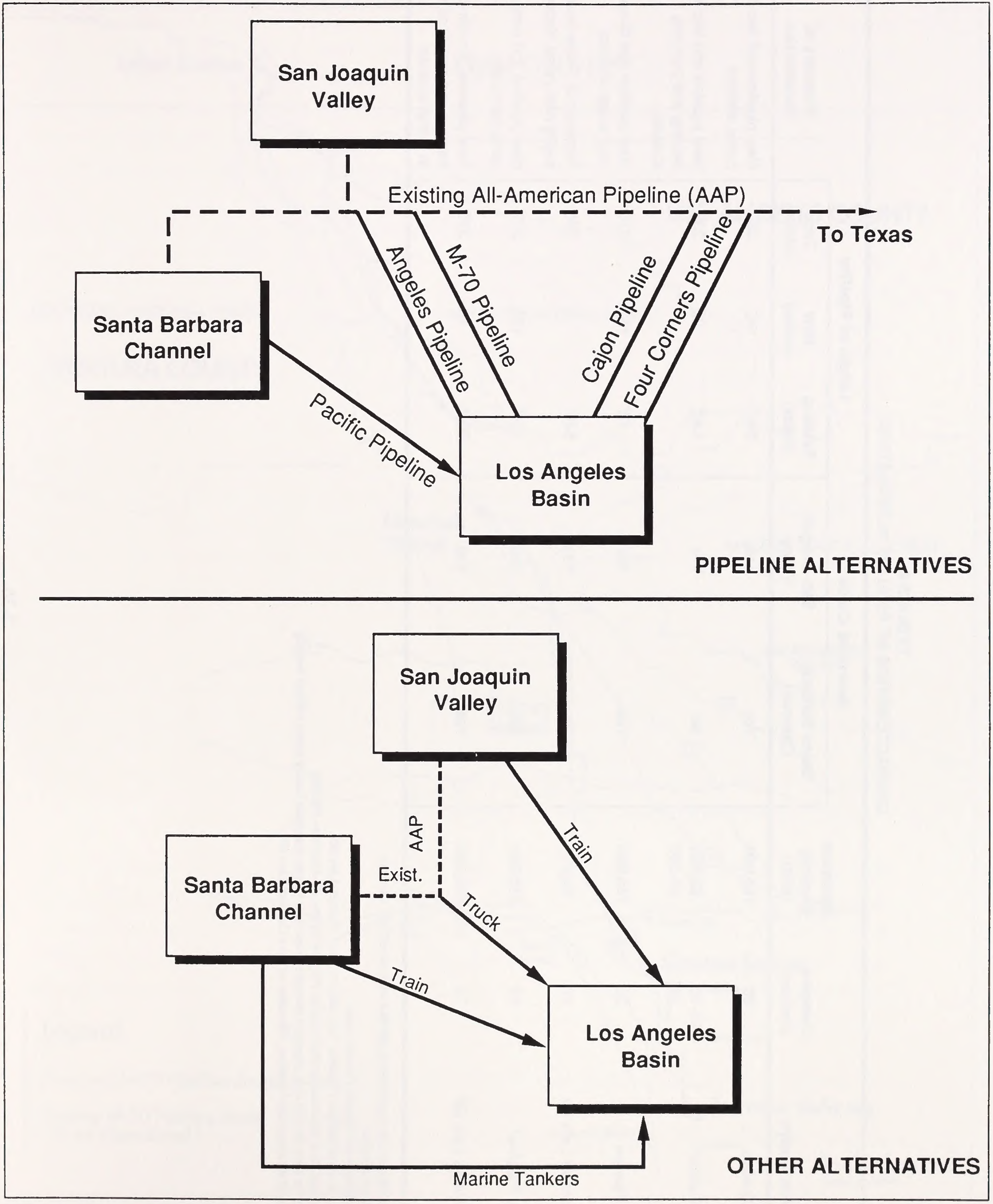

San Joaquin Valley
Existing All-American Pipeline (AAP)
To Texas
Santa Barbara Channel
Angeles Pipeline
M-70 Pipeline
Cajon Pipeline
Four Corners Pipeline
Pacific Pipeline
Los Angeles Basin
PIPELINE ALTERNATIVES
San Joaquin Valley
AAP
Exist.
Train
Santa Barbara Channel
Truck
Train
Los Angeles Basin
Marine Tankers
OTHER ALTERNATIVES

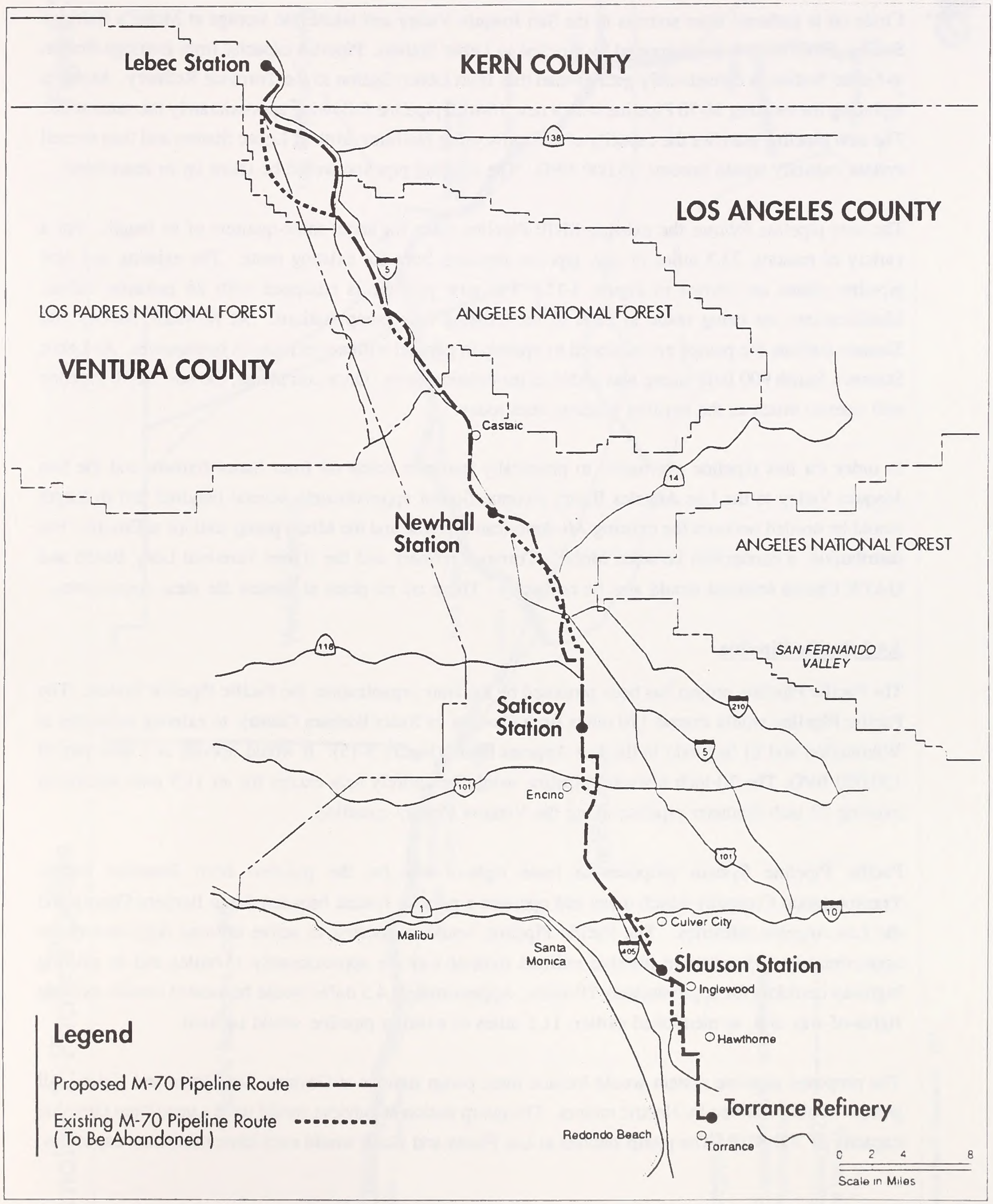
TABLE 3-2
CHARACTERISTICS OF PIPELINE ALTERNATIVES

Alternative	Diameter (inches)	Maximum Capacity (BPD)	Source of Crude		Length of Pipeline			Summary of Construction
			Santa Barbara Channel	San Joaquin Valley	Existing (miles)	New (miles)	Total (miles)	
Cajon Pipeline	20	180,000	Yes	Yes	245[b]	142	387	New pipeline and two new pump stations
M-70 Pipeline[a]	12-16 16	63,000 95,000	No	Yes	140[b]	92	232	New pipeline and four new heating and pumping stations
Pacific Pipeline	20	130,000	Yes	No	12[c]	158	170	New pipeline and three new pump stations
Four Corners Line 90	16	95,000	Yes	Yes	540[d]	0	540	Provision of 3 new heaters and 4 new pump stations
Angeles Pipeline[e]	30	330,000	Yes	Yes	139[b]	136	275	New pipeline and new pumping station
Four Corners Line 63[f]	14	110-130,000	Yes	Yes	260[g]	15	275	New pipeline, provision of heaters and modifications to pump stations

[a] The M-70 Pipeline is a proprietary pipeline with no excess capacity.
[b] All American Pipeline
[c] Existing pipeline on Ventura County coast
[d] 355 miles of All American Pipeline, 185 miles of Four Corners Line 90
[e] Assumes that oil is delivered to the Angeles Pipeline by the All-American Pipeline
[f] Four Corners Line 63 can only transport blended crude and cannot transport heavy crude without heating.
[g] 122 miles of All American Pipeline, 138 miles of Four Corners Line 63

Alternative 1: M-70 Pipeline

Figure 3-14



Source: Dames and Moore, 1991

90439

Crude oil is gathered from sources in the San Joaquin Valley and taken into storage at Mobil's Belridge Station. From there it is transported by pipeline to Lebec Station. Pipeline capacity from Belridge Station to Lebec Station is considerably greater than that from Lebec Station to the Torrance Refinery. Mobil is replacing the existing M-70 Pipeline with a new 16-inch pipeline following approximately the same route. The new pipeline matches the capacity of the conveyance facilities north of Lebec Station and thus overall system capacity would become 95,000 BPD. The existing pipeline would be taken up or abandoned.

The new pipeline follows the existing M-70 Pipeline route for about three-quarters of its length. For a variety of reasons, 23.3 miles of new pipeline deviates from the existing route. The existing and new pipeline routes are shown in Figure 3-15. The new pipeline is equipped with 26 isolation valves. Modifications are being made to each of the existing four pump stations. At Newhall, Saticoy and Slauson stations the pumps are equipped to operate in parallel with no increase in horsepower. At Lebec Station a fourth 900 BHP pump was added to the existing three. Once completed, the new M-70 Pipeline will operate much as the existing pipeline does today.

In order for this pipeline alternative to practically transport crude oil from Santa Barbara and the San Joaquin Valley to the Los Angeles Basin, a connection of approximately several hundred feet in length would be needed between the existing All-American Pipeline and the Mobil pump stations at Emidio. For distribution, a connection between Mobil's Torrance refinery and the Hynes Terminal Long Beach and GATX Carson terminal would also be necessary. There are no plans at present for these connections.

3.4.3 Pacific Pipeline

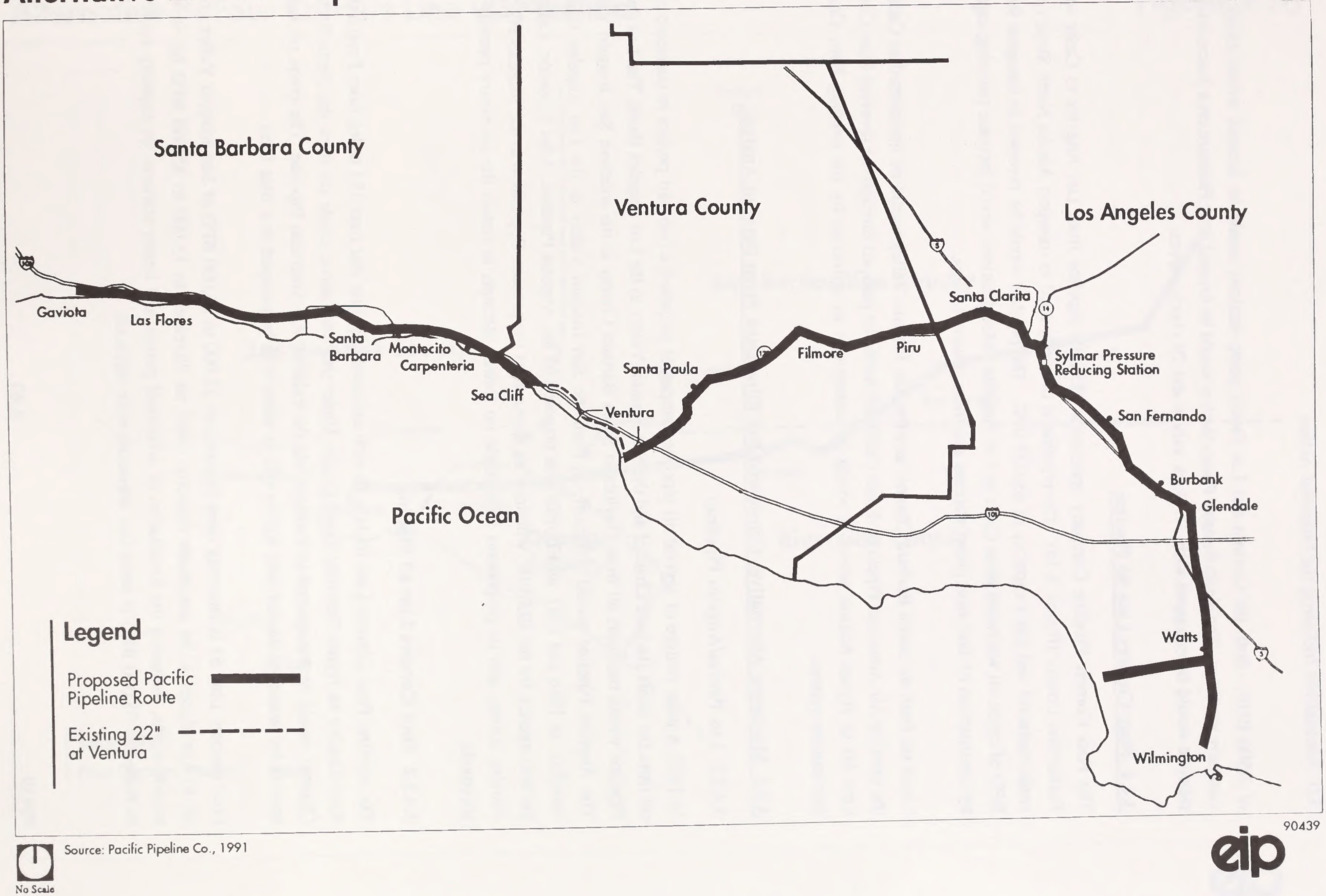
The Pacific Pipeline project has been proposed by a private organization, the Pacific Pipeline System. The Pacific Pipeline would extend 170 miles from Gaviota, in Santa Barbara County, to existing refineries at Wilmington and El Segundo in the Los Angeles Basin (Figure 3-15). It would operate at a flow rate of 130,000 BPD. The 20-inch diameter pipeline would be entirely new except for an 11.5 mile section of existing 22-inch diameter pipeline along the Ventura County coastline.

Pacific Pipeline System proposes to lease right-of-way for the pipeline from Southern Pacific Transportation Company which owns and operates a railway system between Santa Barbara County and the Los Angeles refineries. The Pacific Pipeline would be located in active railroad right-of-way for approximately 133 miles, in inactive railroad right-of-way for approximately 11 miles and in existing highway corridors for approximately 10 miles. Approximately 4.5 miles would be located outside existing rights-of-way and, as mentioned earlier, 11.5 miles of existing pipeline would be used.

The proposed pipeline system would include three pump stations at Gaviota, Las Flores and Keith. All pumps would be driven by electric motors. The pump station at Gaviota would have a maximum pumping capacity of 700 BHP. The pump stations at Las Flores and Keith would each have maximum capacities

Alternative 2: Pacific Pipeline

Figure 3-15



Source: Pacific Pipeline Co., 1991

90439

of 4,500 BHP. Both the Gaviota and Las Flores pump stations would be located within existing oil company facilities. The Keith Booster Pump Station would be located near Fillmore on a 2-acre site. The pipeline would be equipped with 37 block valves and 29 check valves.

3.4.4 Four Corners Line 90 Pipeline

The Four Corners Pipeline Company operates a 185-mile pipeline from Los Angeles to Cadiz in San Bernardino County (Figure 3-16). The pipeline is currently used to transport Alaska North Slope (ANS) crude eastward and has a capacity of 65,000 BPD. The pipeline would be reversed to transport 95,000 BPD of crude oil westward from Cadiz to Los Angeles. Modifications would increase pumping capacity by construction of four new pump stations and three heater stations.

Crude oil from the Santa Barbara Channel and the San Joaquin Valley would be transported to Cadiz by the existing All-American Pipeline. From Cadiz, oil would be pumped through the reversed Four Corners Line 90 to Hynes Station where it would be transported to refineries by the existing Four Corners distribution system.

3.4.5 Marketing Alternatives Considered But Eliminated From Detailed Analysis

3.4.5.1 Los Padres/Angeles Pipelines

In 1984, a joint venture of several oil pipeline companies proposed a two-part project to transport crude oil from the Santa Barbara Channel and the San Joaquin Valley to the Los Angeles Basin. The Los Padres Pipeline would transport oil from Gaviota in Santa Barbara County to the southern San Joaquin Valley. The Angeles Pipeline would transport oil from the San Joaquin Valley to the Los Angeles refinery complex. In 1986 and 1987, an EIS/EIR was prepared on the Angeles Pipeline. After litigation, Caltrans, the lead agency for the EIS/EIR, withdrew its approval of the project. Opposition to the Angeles Pipeline remains strong, and its proponents have made no further attempts to obtain the necessary permits and approvals.

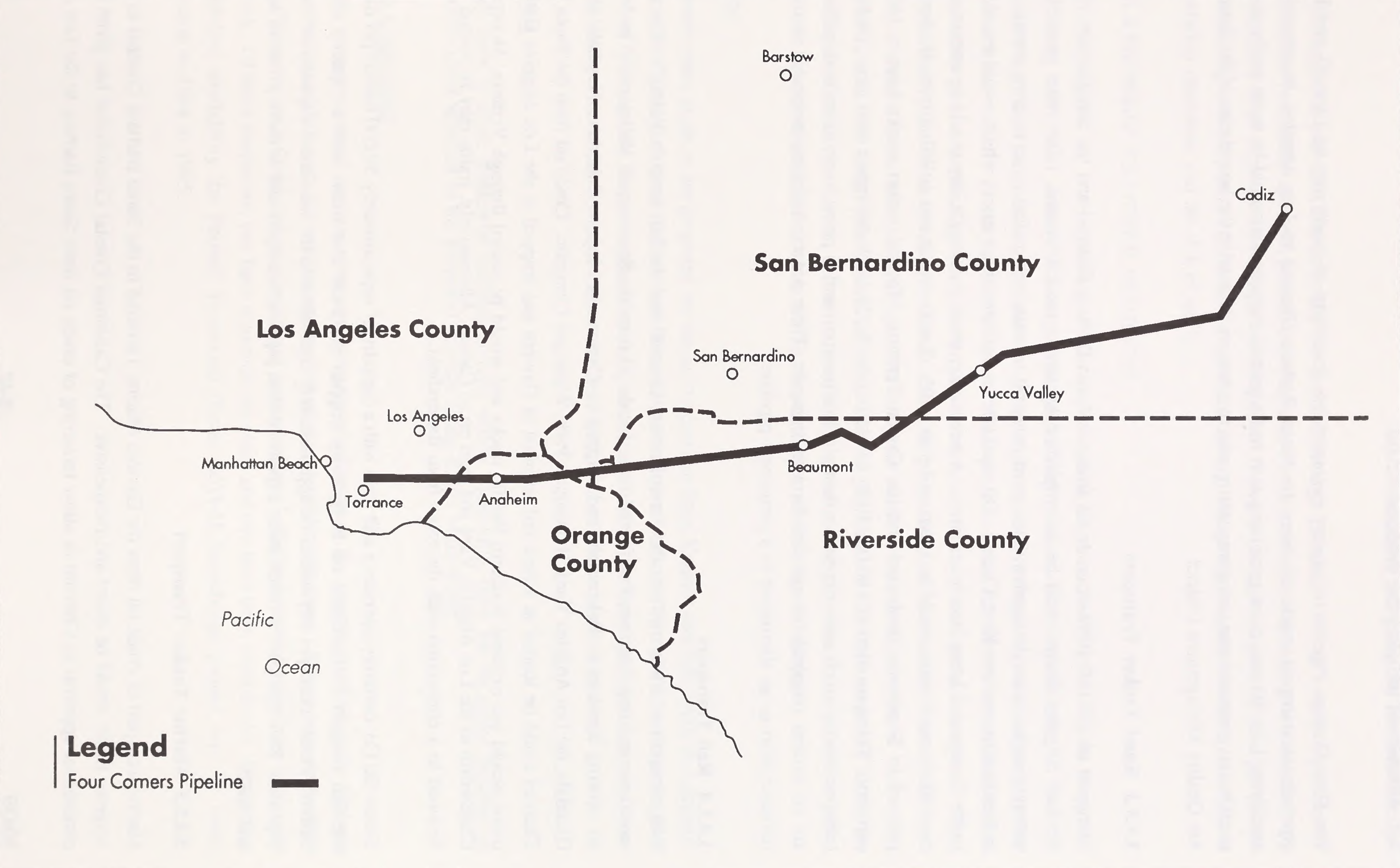
3.4.5.2 Four Corners Line 63 Pipeline

The existing Four Corners Line 63 is a 16-inch unheated pipeline that runs 153 miles from Pentland, in Kern County to Hynes Terminal Long Beach. Under this alternative, crude oil from the Santa Barbara Channel would be transported to Pentland via the existing All-American Pipeline. The crude oil would need to be heated or diluted with lighter oils to allow it to be pumped in a neat form.

Four Corners Line 63 is currently used to transport 25,000 to 35,000 BPD of San Joaquin Valley crude oil to Los Angeles. Its maximum capacity could be increased to 15,000 to 85,000 BPD by various modifications, including the installation of additional pumps and heater stations. Its capacity could be increased to 95,000 BPD if some line segments were replaced.

Alternative 3: Four Corners Line 90 Pipeline

Figure 3-16



The Four Corners Pipeline Company evaluated the feasibility of modifying its Line 63 and Line 90 pipelines to transport crude oil from the Santa Barbara Channel to Los Angeles. It concluded that modifying Line 90 was more promising as it had a greater capacity and could be more easily permitted, as all but its proposed one new pump station and two heaters lie outside the boundaries of the South Coast Air Quality Management District.

3.4.5.3 Road Tanker Transport

Transport of 180,000 BPD of crude oil from the Santa Barbara Channel and the San Joaquin Valley to the Los Angeles Basin could be accomplished by tanker truck transport. The most probable truck transport scenario would involve delivery of crude oil by existing pipeline to an existing storage facility at Pentland in southern Kern County. Oil would be loaded into tanker trucks which would travel by road to the Carson and Long Beach terminals. A new tanker truck loading facility would be necessary. The most likely truck route would be south on I-5 to I-405. Trucks would exit at Wilmington Boulevard and proceed to Sepulveda Boulevard and the Carson Terminal. Typical tanker trucks have a 160 barrel capacity. Transportation of 180,000 BPD would require 1,125 truck deliveries each day. Tanker truck transportation is much more expensive than pipeline transport and is prone to accidents and spills. There are no current proposals to use this form of transport. There are currently no proposals to use truck transportation as an alternative to a permanent pipeline.

3.4.5.4 Rail Transport

Rail transport of crude oil from the Santa Barbara Channel and the San Joaquin Valley to Los Angeles would use existing Southern Pacific rail lines. Crude oil from the San Joaquin Valley could be loaded at an existing terminal in Bakersfield and shipped to Carson via Mojave, Palmdale, Newhall, Burbank, Glendale, the Los Angeles Yard, Huntington Park, Watts and Compton. Crude oil from the Santa Barbara Channel could be loaded at a new rail terminal at Gaviota and shipped to the Los Angeles Basin. Unit trains would use existing Southern Pacific tracks and would be routed through Ventura, Moorpark and Chatsworth to the Los Angeles Yard and then on to Carson. Alternatively, trains may be routed through Newhall to a connection with the route from Bakersfield.

Union Oil Co. currently operates a unit train with a capacity of approximately 50,000 barrels per day, from the San Joaquin Valley.Crude oil is typically shipped in 72-car unit trains with a capacity of 62,000 barrels. Three trains per day would be approximately equivalent to the maximum capacity of the Cajon Pipeline. Rail transport is much more expensive than pipeline transport and is more prone to accidents and spills.

3.4.5.5 Marine Tanker Transport

Marine transport of crude oil from the Gaviota Marine Terminal in the Santa Barbara Channel to the Los Angeles Basin would be direct and inexpensive. The California Coastal Commission has given interim, conditional approval to Chevron to allow tankering of crude oil from Santa Barbara to the Los Angeles

Basin. The approval provides that tankering can proceed through February 1994 as long as a permanent pipeline alternative is in the approval process and only after firm unconditional through-put and deficiency agreements have been signed with the pipeline developer. However, it appears unlikely that permanent marine tankering will be permitted due to the potential for significant environmental impacts associated with operation emissions and the risk of spills.

3.5 RELATIONSHIP TO OTHER PROJECTS

A number of projects are in the planning stages in the various cities and other jurisdictions along the pipeline route. City and county planning departments and public works departments, as well as transportation agencies were contacted to determine the location, size, timing, and status of projects that might occur in the vicinity of the pipeline corridor. These projects could feasibly be constructed within the construction period for the Cajon Pipeline project and would contribute to cumulative impacts. They are listed in Table 3.3. Although all jurisdictions along the proposed pipeline route have been contacted, only those discussed below have identified projects along the route. In addition, the cities of Victorville, Compton, Carson, and Long Beach have indicated that no projects are currently proposed along the pipeline route. Due to the current economic conditions, a number of cities have limited construction activity, and none is anticipated to occur within the same area as the proposed project.

Adelanto

Two transmission projects are proposed for the utility corridor from Kramer Junction south to Adelanto. The Mead/McCullough-Victorville/Adelanto Transmission Project proposed by the City of Los Angeles Department of Water and Power is scheduled for construction in 1993. A lateral pipeline from the Kern-Mojave Gas Pipeline to the Southern California Gas Pipeline in Adelanto is also proposed.[3]

Victorville

Although there is some residential building activity within Victorville, there are no major building or construction plans adjacent to the proposed corridor along Baldy Mesa Road.[4]

Rancho Cucamonga

There are four commercial projects proposed along the pipeline route, the largest of which is the Victoria Gardens Regional Mall with 1.2 million square feet of commercial/retail space. Others include Foothill Market Place, Victoria Courtyard, and a Unocal service station.[5] Eight industrial properties back onto Day Creek. Of these properties, two have approved site plans and two have been constructed. Depending upon funding availability the Foothill Boulevard (Route 66)/I-15 interchange project may be under construction in 1994 or 1995.

Ontario

An underpass project is currently under construction at the intersection of Haven and Mission.[6] Other projects currently proposed include two specific plans consisting of commercial, office, and industrial uses, eight industrial buildings at various locations and a self-service gas station.[7] Eight industrial properties back onto Day Creek. Of these properties, two have approved site plans and two have been constructed. Depending upon funding availability the Foothill Boulevard (Route 66), I-15 interchange project maybe under construction in 1994 or 1995.

Montclair

An industrial building (0.43 acre) and a business park (19.6 acres) are proposed in the vicinity of the pipeline route.[8]

Pomona

The pipeline route bisects the 380-acre Downtown Specific Plan project area. Other projects include the reuse of the Mayfair Hotel building and a commuter rail stop south of the Union Pacific railroad tracks, north of First Street and at the foot of Thomas Street. A 36-inch storm drain will be constructed across First Street within Park Avenue (approximately M.P. 100.3). A 21-inch sanitary sewer will be constructed across First Street with Gibbs Street (approximately M.P. 100). A 21-inch sanitary sewer will be constructed across First Street at either Reservoir Street (M.P. 99.0) or East End Avenue (M.P. 98.5) in accordance with the City's latest sewer deficiency study.

Montebello

A specific plan is proposed for the Chevron oil fields in the Montebello Hills. The specific plan area is approximately 450 acres, with construction to commence in 1993.[9]

City of Industry

No building construction is currently proposed adjacent to the pipeline right-of-way. A number of road widenings - at Currier Road, Chestnut Street and Don Juan Road are presently proposed.[10]

Compton

There is no building or construction activity anticipated within the study area of the proposed pipeline in Compton.[11]

Long Beach

Due to the present economic conditions, issuance of building permits within the Long Beach downtown area is presently on-hold. No building or construction plans are proposed within the study area of the proposed pipeline in Long Beach.[12]

Carson

A number of projects are proposed for Carson but none are adjacent to, or within the study area for, the proposed pipeline.[13]

County of San Bernardino

The northern section of the pipeline route lies within unincorporated areas of San Bernardino County. A 16,500 seat amphitheater is proposed for the Glen Helen Regional Park. In addition, the design phase is underway for a 120-acre mining project (Signia Rock Mining), located approximately one quarter mile from the I-15 along SR-138.

BLM Lands

The Southern California Edison Company is currently proposing the 220 kV Kramer-Victor No. 1 and 2 Transmission Line project. Most of the transmission line route will parallel U.S. 395. The project starts at the Kramer Substation and ends 37 miles away at the Victor Substation.

U.S. Army Corps of Engineers

The Army Corps of Engineers in their report, LACDA Review of Los Angeles County Drainage Areas (April, 1991), suggested raising a parapet wall, 10 inches thick and one to eight feet in height (depending upon location) and three feet deep on the Rio Hondo flood channel to increase flood capacity. The walls would be constructed on the existing levees along the Rio Hondo.

Caltrans

As part of the future 210 Freeway extension, an interchange is proposed to be constructed at the junction of State Route 30 (SR-30) and I-15, in the vicinity of the existing Highland Avenue overpass.

TABLE 3.3
Other Proposed Projects Along the Cajon Pipeline Route

Jurisdiction	Projects	Location	Size	Application Status	Construction Timing
Adelanto	Mead/McCullough-Victorville/Adelanto Transmission Project	Along U.S. 395 from Kramer Junction to Adelanto	—	Approved	1993
	Kern River Gas Pipeline Adelanto Lateral	Along U.S. 395 from Kramer Junction to Adelanto	—	Proposed	Unknown
Victorville	No projects.				
Rancho Cucamonga	Foothill Market Place	Foothill/I-15	545,000 sq.ft. on 60 acres	Approved	Under construction
	Victoria Gardens (regional mall)	Foothill/I-15	1.2 million sq.ft.on 100 acres	Approved	Unknown
	Victoria Courtyard	SW corner Day Creek/Foothill	323,000 sq. ft. on 31.2 acres	Approved	Unknown
	Unocal service station	NE corner East Ave/Baseline	10,600 sq. ft. on 1.9 acres	Proposed	Unknown
	Foothill Boulevard (Route 66)/I-15 Interchange	Foothill/I-15	--	Proposed	1994/1995
	Industrial Properties (adjacent to Day Creek)	Santa Anita Ave., or 4th Street	--	Proposed /Approved	Unknown
Ontario	Haven/Mission underpass	Haven/Mission	--	Approved	Under construction
	Light manufacturing/warehouse building with offices	SW corner of Mission Blvd./Business Parkway	75,395 sq. ft.	Proposed	Unknown
	Industrial building	South of Mission Blvd.	50,404 sq. ft.	Proposed	Unknown

TABLE 3.3
Other Proposed Projects Along the Cajon Pipeline Route

Jurisdiction	Projects	Location	Size	Application Status	Construction Timing
	Thirty-four (34) industrial buildings	North of I-10 between Etiwanda and I-15		Proposed	Unknown
	Acco Specific Plan	NW corner of Haven Avenue and Mission Boulevard	—	Proposed	Unknown
	Shea Specific Plan	SE corner of I-10 and I-15	—	Proposed	Unknown
	Eight (8) industrial buildings	SW corner of Airport Dr. and Wineville	—	Pending building permits	Unknown
	Four (4) industrial buildings	SE corner of Mission Boulevard and Vineyard Avenue	—	Pending building permits	Unknown
	Industrial building	Sarah Place, south of Santa Ana	259,845 sq.ft.	Pending building permits	Unknown
	Two (2) industrial buildings	SW corner of Mission Boulevard/ Archibald Avenue	291,049 sq. ft.	Pending building permits	Unknown
	Distribution facility	SE corner of Mission/Performa	152,183 sq. ft.	Pending building permits	Unknown
	Self-service gas station	NE corner of Campus/Main Avenues	—	Pending building permits	Unknown
Montclair	Industrial building	5139 State St.	8,876 sq.ft. on 0.43 acres	Planing Commission Approval	Unknown
	Business park	Mission between Ramona and Monte Vista	19.6 acres	Proposed	Unknown

TABLE 3.3
Other Proposed Projects Along the Cajon Pipeline Route

Jurisdiction	Projects	Location	Size	Application Status	Construction Timing
Pomona	Downtown Specific Plan	Between Mission, Holt, Towne and White.	380 acres	Proposed	Unknown
	Mayfair Hotel project renovation	115 E. Third St.	32 units	Proposed	Unknown
	Three (3) mixed-use residential projects	Linden/Eleanor Third/Fourth Mission/Fourth	50-60 units each	Proposed	Unknown
	County public parking	2003 West Holt (old Chalet Lodge)	---	Proposed	Unknown
Industry	Currier Road reconstruction	—	—	Proposed	Unknown
	Chestnut Street widening	—	—	Proposed	Unknown
	Don Juan Street widening	—	—	Proposed	Unknown
Montebello	Chevron Oil Specific Plan	Montebello Hills	450 acres	Currently design phase	1993
Pico Rivera	NA No Response				
South El Monte	NA No Response				
Downey	NA No Response				
South Gate	NA No Response				
Paramount	NA No Response				
Compton	No projects				
Long Beach	No projects				
Carson	No projects				
County of San Bernardino	Glen Helen Amphitheater	Glen Helen Regional Park	16,500 seating cap.	Pending approval	6/93
	Signia Rock Mining	0.25 mile west of I-15 along SR-138	120 acres	Design phase	3/93

TABLE 3.3
Other Proposed Projects Along the Cajon Pipeline Route

Jurisdiction	Projects	Location	Size	Application Status	Construction Timing
BLM	SCE 220kV Kramer-Victor #1 and 2	Along U.S. 395 from Kramer to Victor Substation	37 miles	Proposed	Unknown
U.S. Army Corps of Engineers	Flood control levee	Rio Hondo Flood Control channel	—	Proposed	Unknown
Caltrans	SR 30/I-15 Interchange	Highland Avenue	--	Proposed	Unknown

ENDNOTES

1. Final SEIR/S, GTC Marine Terminal
2. Analysis of Refining/Transportation Issues Associated with Chevron's Q-6-4 Application, Arthur D. Little, August 3, 1992.
3. Roland Dorval, City Engineer, City of Adelanto, August 20, 1992.
4. City of Victorville Planning Department, July 15, 1992.
5. Rancho Cucamonga Quarterly Status Report, and conversation with Brad Buller, Planning Department, July 16, 1992.
6. Stu Ward, Engineer Trainee, City of Ontario, July 16, 1992.
7. John Freiman, Deputy City Planner, City of Ontario, August 3, 1992.
8. Christine Sanchez, Assistant Planner, City of Montclair, July 16, 1992.
9. Paul Deibel, Planning Director, City of Montebello, July 15, 1992.
10. Brian Ridenour, Engineering Department, City of Industry, August 28, 1992.
11. Linda Timmons, City of Compton, Building and Safety, July 15, 1992.
    Kofi, City of Compton, Community Redevelopment Agency, July 15, 1992.
12. City of Long Beach, Environmental Department, July 15, 1992.
13. City of Carson Planning Department, July 15, 1992.

4.0

Affected Environment

4. AFFECTED ENVIRONMENT

This chapter describes the environment that could be affected by the proposed project and its alternatives. The chapter is divided into sections that address different aspects of the affected environment. Within each section is a discussion of the environment affected by the proposed project, the Cajon Pipeline, followed by a similar discussions for each of the pipeline alternatives to the proposed project: the Kramer Segment Alternative, the Sycamore South Segment Alternative, and the Marketing Alternatives: the M-70 Pipeline, the Pacific Pipeline, and the Four Corners Pipeline.

The No Project alternative is not addressed within Chapter 4.0, Affected Environment but is discussed within Chapter 5.0, Environmental Consequences. As previously described in Section 3.3.4 it would probably involve increased importation of crude oil by marine tanker from outside of the United States of America.

Information on the Cajon Pipeline was developed specifically for this EIS/EIR. Information on the alternatives is summarized from the following environmental documentation:

- Final Environmental Impact Report/Statement for the Proposed M-70 Pipeline Replacement and System Optimization Project. SCH 89010177. Dames and Moore for the U.S. Department of Agriculture and the Los Angeles Department of Transportation

- Pacific Pipeline Proponents Environmental Assessment, Pacific Pipeline Company, October, 1991.

These documents are available at:

Bureau of Land Management
California Desert District
6221 Box Springs Blvd.
Riverside, CA 92507

City of Adelanto
City Engineers Department
11600 Air Base Road
Adelanto, CA 92301

4.1 GEOLOGY, SEISMICITY AND SOILS

4.1.1 CAJON PIPELINE

The detailed discussion of the geologic setting for the Cajon Pipeline is divided into three segments: the Mojave Desert segment, the mountain segment and the urban segment. The detailed discussion is prefaced by a more general description of regional geology and seismicity.

Regional Geologic Setting

The proposed Cajon Pipeline crosses portions of the Mojave Desert and Transverse Ranges Geomorphic Provinces. Approximately 50 miles of the route are situated in the Mojave Desert, from 12-Gauge Lake to the Transverse Ranges (San Gabriel and San Bernardino Mountains). South of the Cajon Pass, the route passes through the San Gabriel Valley and onto the Los Angeles coastal plain.

The Mojave Desert comprises a landlocked, triangular shaped area bounded on the north and northeast by the Tehachapi Mountains, Garlock Fault, and Basin and Range Province; on the south and west by the San Andreas Fault and the Transverse Ranges; and on the east by the Colorado River. The province is dominated by broad alluviated basins that receive sediment from adjacent uplands. Throughout the desert, small hills rise above the alluvial fill. In the study area these hills are typically remnants of an eroded and buried Mesozoic sedimentary and metamorphic terrain.

The Transverse Ranges Geomorphic Province is characterized by a series of east-west trending ranges and valleys, many of which are bounded by faults. The province extends from Point Arguello eastward to the Joshua Tree National Monument, where it merges with the Mojave and Colorado deserts. The province is 60 miles at its widest near the Ventura-Los Angeles County Line. The pipeline route passes south through the Cajon Pass, which separates the San Gabriel and San Bernardino Mountains. Slopes in this section of the route are considered steep to very steep.

The San Gabriel Mountains in the central part of the Transverse Ranges consist of Precambrian plutonic and metamorphic rocks and Mesozoic granitic rocks. The Los Angeles and upper Santa Ana river basins, which lie along the southern margin of the Transverse Ranges, are broad alluviated plains. The coastal plain is generally characterized by low topographic relief and shallow slopes. The Los Angeles basin contains a thick sequence of Holocene through early Cenozoic marine and non-marine sediments and is one of the most prolific petroleum producing regions in the world.

Regional Faulting And Seismicity

The Cajon Pipeline route traverses a seismically active region that has experienced several large earthquakes in the last 150 years. The locations of these historic earthquakes are generally coincident with the major active fault zones of southern California (Figure 4.1.1-1). Most of the regional seismicity is related to the San Andreas, San Jacinto, Whittier, and Newport-Inglewood faults. However, recently the Magnitude (M) 7.5 Landers earthquake occurred on a previously unrecognized fault, breaking parts of four or five smaller faults.

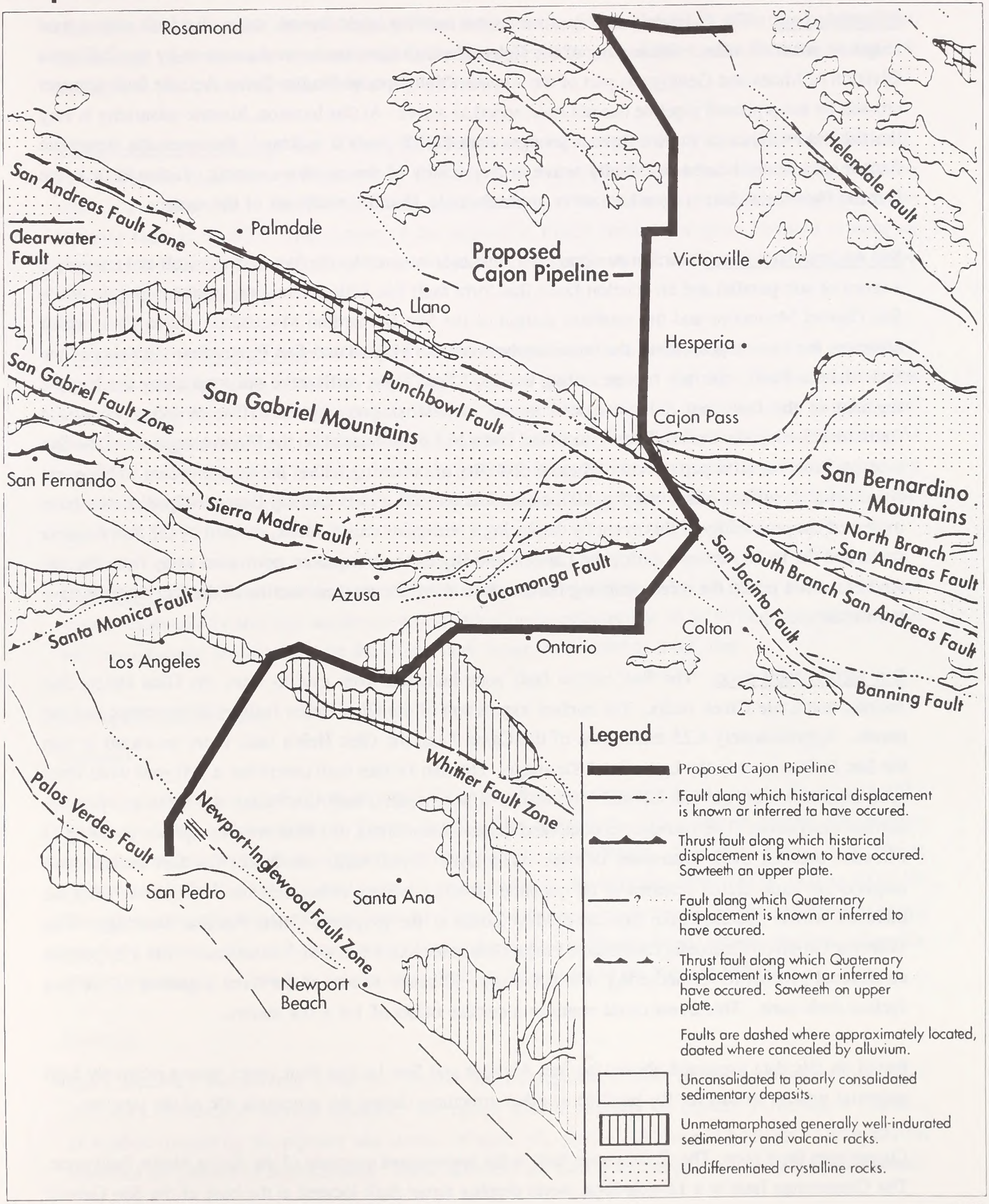
Notable historic earthquakes include the 1857 Fort Tejon earthquake of M 8.25; the 1933 Long Beach earthquake of M 6.3; the 1987 Whittier Narrows earthquake of M 5.9; the 1991 Sierra Madre earthquake of M 5.8; the 1992 Landers earthquake of M 7.5 ; the 1992 Big Bear Earthquake of M 6.6; and several M 5.0 - 6.8 events south and east of San Bernardino, dating back to 1900.

The active faults, or fault zones, crossed by the proposed route are, from north to south, San Andreas, Glen Helen, San Jacinto and Lytle Creek faults. In addition, the pipeline route passes near active traces of the Helendale, Cucamonga, Chino, Whittier and Newport-Inglewood faults and may cross buried extensions of these faults. The fault that ruptured during the recent Landers earthquake is located about 60 miles east of the proposed Cajon Pipeline route. Information on these faults is summarized below and in Table 4.1.1-1.

TABLE 4.1.1-1
Summary Of Active Faults
(Cajon Pipeline)

Fault	Maximum Credible Magnitude	Return Interval	Reference
Helendale	7.5	1379	Dokka, 1985 Wesnousky, 1986
San Andreas (Mojave)	8.5	162	Sieh and Jahns, 1984
San Andreas	8.0	150 - 200	Weldon and Sieh, 1985
San Jacinto, Glen Helen, Lytle Creek	7.5	203	Sharp, 1981
Cucamonga	7.0	625	Morton, et.al., 1987
Chino	7.0		Wesnousky, 1986
Whittier	7.5		Wesnousky, 1986
Newport-Inglewood	7.5	1500	Clark, et.al., 1984

Major Active Fault Zones of Southern California Figure 4.1.1-1


Rosamond
Helendale Fault
San Andreas Fault Zone
Palmdale
Clearwater Fault
Proposed Cajon Pipeline
Victorville
Llano
Hesperia
San Gabriel Fault Zone
San Gabriel Mountains
Punchbowl Fault
Cajon Pass
San Fernando
San Bernardino Mountains
Sierra Madre Fault
North Branch San Andreas Fault
San Jacinto Fault
South Branch San Andreas Fault
Cucamonga Fault
Azusa
Santa Monica Fault
Colton
Ontario
Los Angeles
Banning Fault
Whittier Fault Zone
Palos Verdes Fault
Newport-Inglewood Fault Zone
San Pedro
Santa Ana
Newport Beach
Legend
Proposed Cajon Pipeline
Fault along which historical displacement is known or inferred to have occured.
Thrust fault along which historical displacement is known to have occured. Sawteeth on upper plate.
?
Fault along which Quaternary displacement is known or inferred to have occured.
Thrust fault along which Quaternary displacement is known or inferred to have occured. Sawteeth on upper plate.
Faults are dashed where approximately located, dotted where concealed by alluvium.
Unconsolidated to poorly consolidated sedimentary deposits.
Unmetamorphosed generally well-indurated sedimentary and volcanic rocks.
Undifferentiated crystalline rocks.

Source: Castle, Elliot, Church & Wood, 1984

No Scale

90439

Helendale fault: The Helendale fault is a northwest trending, right lateral, strike slip fault with a total length of about 60 miles. While parts of the Helendale fault have been zoned as active by the California Division of Mines and Geology as part of the Alquist-Priolo Special Studies Zones Act, the fault segment crossed by the proposed pipeline has not been zoned as active. At this location, historic seismicity is very limited and evidence of surface rupture younger than 11,000 years is lacking.[1] However, the Helendale fault should be considered potentially active in the vicinity of the pipeline crossing. It should be noted that the Helendale fault is zoned as active approximately 15 miles southeast of the route.

San Andreas fault zone: The San Andreas fault zone is dominated by the San Andreas fault and comprises a series of sub-parallel and en-echelon faults that form fault line valleys along the northern margin of the San Gabriel Mountains and the southern margin of the San Bernardino Mountains. Cajon Pass, which separates the two ranges, marks the boundary between the Mojave and San Bernardino segments of the San Andreas Fault. Surface rupture during the 1857 Fort Tejon earthquake occurred along the Mojave segment of the fault, but did not extend to the San Bernardino segment. The Working Group on California Earthquake Probabilities[2] concluded that a M 7.5 earthquake on the Mojave segment of the San Andreas fault has a 30 percent conditional probability of occurring within the next 30 years. This event could result in surface offset of 4.5 ± 1.0 meters. The recent Landers and Big Bear earthquakes may have increased the probability of this event by displacing a triangular crustal block, defined by the San Andreas faults and the faults ruptured during the Landers and Big Bear earthquakes, northward away from the San Andreas. As a result, the forces resisting fault rupture along the southern section of the San Andreas have been reduced.

San Jacinto fault zone: The San Jacinto fault zone includes, from east to west, the Glen Helen, San Jacinto, and Lytle Creek faults. The surface expression of the Glen Helen fault includes scarps and sag ponds. Approximately 6.25 miles west of the Cajon Pass, the Glen Helen fault veers westward to join the San Jacinto fault in the Lytle Creek Drainage. The San Jacinto fault comprises a 300 yard wide shear zone where it enters the San Gabriel Mountains. It lies within a fault-line valley and lacks any primary surface expression. The youngest documented displacement along this fault zone comprises thrusting of Miocene bedrock over Quaternary detritus. The Lytle Creek fault, which like the San Jacinto fault displays no fault related features at the pipeline crossing, offsets older alluvium. All three faults are included within Alquist-Priolo Special Studies Zones at the proposed Cajon Pipeline crossings. The Working Group on California Earthquake Probabilities concluded that a M 7.0 earthquake has a 20 percent conditional probability of occurring within the next 30 years on one of the three segments of the San Jacinto fault zone. This event could result in a surface offset of 1.4 ± 0.4 meters.

Based on this data presented above, the San Andreas and San Jacinto fault zones pose a relatively high potential rupture hazard for the pipeline or other structures during the economic life of the pipeline.

Cucamonga fault zone: The Cucamonga fault is the easternmost segment of the Sierra Madre fault zone. The Cucamonga fault is a 12-mile-long, north dipping thrust fault located at the base of the San Gabriel

Mountains north of the City of Ontario. The height and age distribution of fault scarps along the Cucamonga fault zone are consistent with 2 meter vertical offsets associated with characteristic M 6.5 earthquakes that occur approximately every 700 years.[3]

Whittier-Elsinore fault zone: The Whittier fault lies at the northern end of the Whittier-Elsinore fault zone. This fault zone has produced numerous M 4 earthquakes and a few M 5 shocks. However the recorded seismicity attributable to the Whittier fault, has been low. The maximum credible earthquake on the Whittier fault is M 7.3.[4] The section of the alignment routed through Whittier Narrows crosses an exceptionally complex zone, but there is no evidence to support the existence of an extending trace of the Whittier fault in this area.

Newport-Inglewood fault zone: The Newport-Inglewood fault zone comprises a series of en-echelon northwest-trending faults and folds extending from the south edge of the Santa Monica Mountains southeast to an area offshore of Newport Beach. Much of the zone is overlain by deep alluvium and therefore is vaguely defined. This fault has a history of moderate to high seismic activity with numerous shocks of greater than M 4, including the historic M 6.3 Long Beach earthquake thought to be centered near Newport Beach on March 10, 1933. The maximum credible earthquake for the Newport-Inglewood fault is M 7.0.[5]

Chino fault: The Chino fault is located in the southeast corner of the City of Chino Hills. The fault trends northwesterly and dips southwest at angles variously estimated at 45 to 60 degrees. Estimates of total stratigraphic displacement on the Chino fault range from 1,200 to 2,400 feet.

Mojave Desert Segment

General

The Mojave Desert segment of the proposed Cajon Pipeline runs from the All-American Pipeline (AAPL) 12-Gauge Lake heater station to Phelan Road. The segment is 53.5 miles in length and follows transmission line corridors or unpaved roads through the entire length. The route crosses U.S. 395 at approximately M.P. 14.0 and runs west of and parallel to the highway from M.P. 14.0 to M.P. 37. Elevations along the Mojave Desert segment of the pipeline route range from a height of 2,280 feet above sea level at the 12-Gauge Lake heater station to 3,685 feet at Phelan Road. Slope gradients along the stretch average vary from 2 to locally steep areas of 14 percent in the Kramer Hills.

Geology

Earth materials encountered along the Mojave Desert segment consist primarily of recent and older (probably Pleistocene) alluvial deposits. The recent alluvial deposits are present in the active channels of washes crossed by the pipeline and consist of sand, silt, gravel, cobbles and boulders. Older alluvial materials are present as debris aprons. These materials are similar in composition to the recent alluvium.

The geologic conditions along this section of the route are shown on sheets 1 through 8 of the Cajon Pipeline Route Maps, contained in Appendix A.

Faults and Seismicity

The only major fault encountered along the Mojave Desert segment of the Cajon Pipeline route is the Helendale fault. The pipeline probably crosses a buried extension of the Helendale fault near M. P. 6.5. In addition, the pipeline crosses buried extensions of the South Lockhart fault near M.P. 19, Spring fault near M. P. 21.0 and the Blake Ranch fault near M.P. 31. The age of latest movement on these faults is not known.

Slope Stability

Slope gradients along this section of the alignment vary from less than 2 percent on the desert section parallel to SR-58 to 14 percent in the Kramer Hills parallel to U.S. 395. The proposed Cajon Pipeline route does not cross any landslides in this segment.

Groundwater

The Mojave Desert segment of the proposed Cajon Pipeline crosses the Harper, Middle, and Upper Mojave sub-units of the Mojave River Groundwater Basin (Figure 4.1.1-2). Groundwater is present in this basin in alluvial aquifers under water table conditions, although some confined aquifers may be present in the older alluvium trapped by wedges of fine grained sediments. Water surface elevations fluctuate seasonally, but are generally at depths of greater than 100 feet below ground surface. Recharge to the various aquifers occurs primarily through subsurface flow from the Mojave River and runoff from the San Gabriel Mountains.

Soils

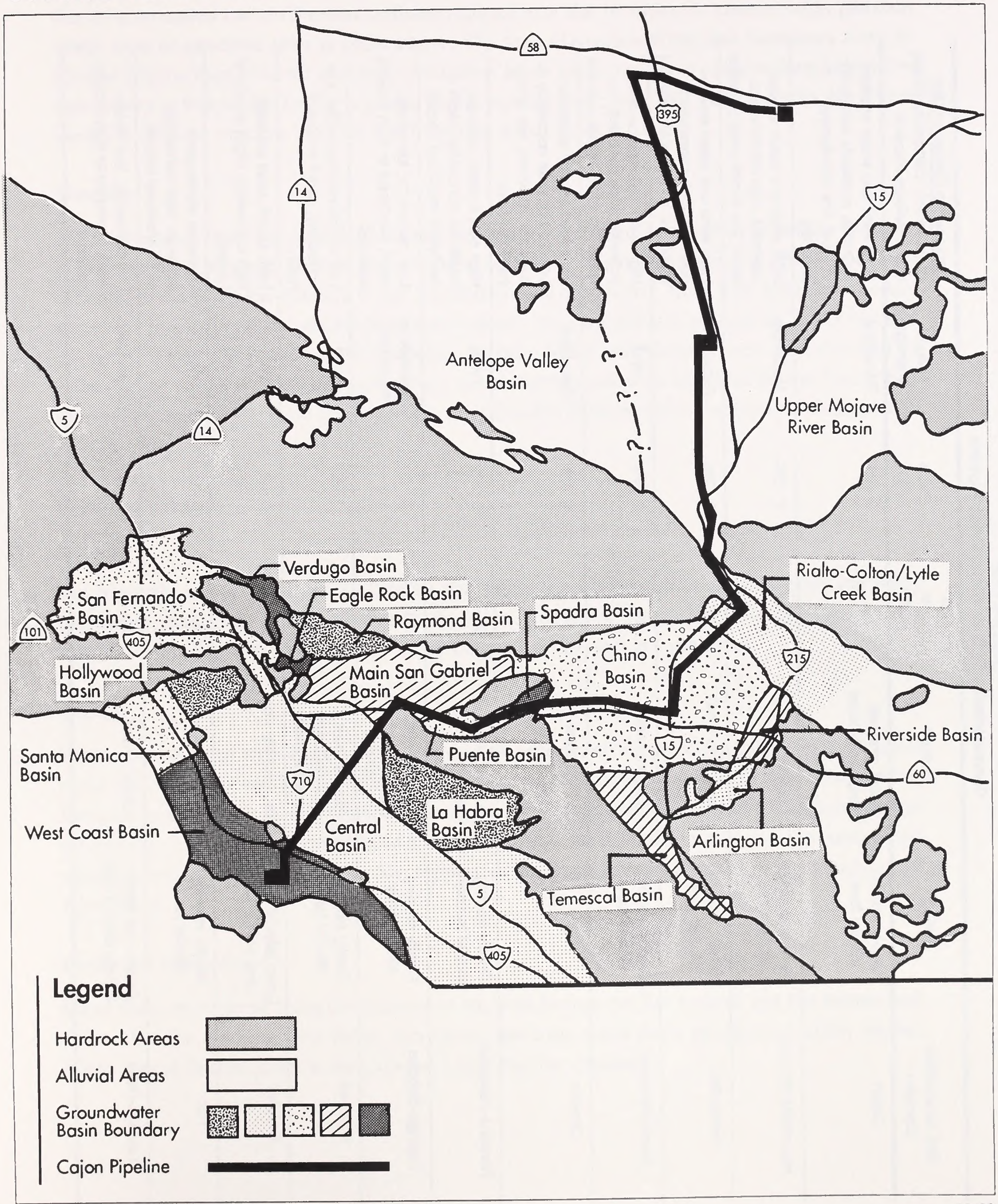
Soil series in the Mojave Desert segment of the Cajon Pipeline include Cajon Sand, Helendale-Bryman sandy loam, Kimberline loamy fine sand, Lavic loamy fine sand, and the Norab Holloram complex (Table 4.1.1-2). These soils range in composition from loamy fine sand to gravelly sand.

Engineering characteristics of soils summarized in Table 4.1.1-2, which are of important are permeability, expansiveness, erosion potential and stability. These soil conditions can influence the types of foundations that can be used at a given site. Expansiveness of the potential to swell and shrink with repeated cycles of wetting and drying, is a common feature to fine-grained soils. Expansive soils are not suitable for building foundations as they tend to compress and do not provide adequate support unless specially treated.

Soils in this region are typically excessively to moderately well drained with groundwater at depths of greater than 100 feet. In addition, their water erosion potential is high, and trench wells commonly cave-in. Their suitability as topsoil is low to fair.

Groundwater Basins

Figure 4.1.1-2



Source: Los Angeles Department of Public Works

No Scale

90439

TABLE 4.1.1-2
Characteristics Of Soils Along Cajon Pipeline

Soil Association Complex	Setting	Texture	Soil Depth (feet)	Slope (%)	Natural Drainage	Engineering Characteristics Shrink-swell, Corrosivity (Steel) and Erosional Hazards
Cajon	Gently sloping alluvial fans	Sand, gravelly sand, sandy loam	5	0 - 9%	Excessive	High wind and water erosion potential, moderate corrosivity to steel, low shrink-swell potential
Helendale-Bryman	Gently sloping alluvial fans	Loamy sand	5½	2 - 5%	Moderate	High wind and water erosion potential, high corrosivity to steel, low shrink-swell potential
Kimberline	Gently sloping alluvial fans	Loamy fine sand	5	0 - 2%	Excessive	High wind and water erosion potential, high corrosivity to steel, low shrink-swell potential
Norab-Holloram	Gently sloping alluvial fans	Loamy sand	5+	0 - 5%	Well	High wind and water erosion potential, high corrosivity to steel, low shrink-swell potential
Oceana	Sand	Fine sand	5+	0 - 9%	Excessive	High wind erosion potential Low to moderate corrosivity to steel and concrete, low shrink-swell potential
Ramona-Placentia	Gently sloping alluvial terraces	Loam, sandy loam, clay loam, clay	1½ - 5	5 - 9%	Well	High shrink-swell behavior, moderate corrosivity, slight to moderate erosional hazard
Tujunga-Soboba	Gently sloping alluvial fans	Loamy fine sand, cobbly loamy sand	5+	0 - 9	Moderate to excessive	Low corrosivity, low shrink-swell, moderate to high erosion potential
Hanford	Gently sloping alluvial fans	Sandy loam, gravelly loam, coarse sand	5+	2 - 5	Well	Low shrink-swell potential, low corrosivity, slight erosional hazard
Cropley	Level alluvial plains and valley floor	Clay, gravelly clay	5+	0 - 2	Well	High shrink-swell potential, high corrosivity, slight erosional hazard
Yolo	Gently sloping alluvial fans	Loam, silt loam	5+	0 - 2	Well	Moderate shrink-swell behavior, high corrosivity, slight erosional hazard
Tujunga-Delhi	Dunes and gently sloping alluvial fans	Loamy sand	5+	0 - 2	Excessively	Low corrosivity, low shrink-swell, moderate to high erosion potential

Due to urbanization and development, soils encountered may also be subject to contamination problems which must be identified prior to construction. The State Hazardous Waste and Substances Site List (Cortese Lit) has been reviewed in order to preliminary locate areas of potential concern along the pipeline right-of-way. Within the Desert Segment of the pipeline route only two potential sites have been identified - leaking tanks on U.S. 395 and El Mirage Road (Table 4.1.1-3).

Minerals

The BLM Master Title Plats, Leasable Mineral Plats, and Use Plats were reviewed too determine the status of any mineral leases and Mineral Material Sales within the Cajon Pipeline route. BLM staff were consulted to determine the existence of any locatable mineral operations.[6] None were identified. Several areas were leased for oil and gas but have since expired. No current leases are held for any portions of the route. Open file reports of the California Division Mines and Geology were also reviewed to determine the presence of any resources zones. No resources zones were identified for this area of San Bernardino County. The Land Use Plats have identified this route as within a designated transportation right-of-way.

Mountain Segment

General

The Mountain segment of the Cajon Pipeline runs from Phelan Road, following ranch roads and Baldy Mesa Road, through Cajon Pass and then southward to Lytle Creek (Approx. M.P. 74). Elevations range from approximately 4,600 feet, north of Cajon Canyon, to 1900 feet at Lytle Creek.

Geology

Earth materials to be encountered along the mountain segment of the proposed Cajon Pipeline include recent and older alluvium, Tertiary sedimentary rocks of the Cajon (Punchbowl) and Crowder Formations, Mesozoic granitic rocks, and crystalline rocks of the Precambrian San Gabriel Complex. Relationships between the various units are complicated due to large offsets and deformation along the San Andreas and related faults. The geology along this segment of the route is shown on maps 9 through 12 of Appendix A.

Faults and Seismicity

Major faults encountered along this segment of the route include the San Andreas and San Jacinto fault zones. The San Andreas, Glen Helen, San Jacinto and Lytle Creek faults are included within Alquist-Priolo Special Studies Zones at the proposed Cajon Pipeline crossings.

TABLE 4.1.1-3
Potential Contaminated Soil Sites for the Proposed Cajon Pipeline Project

Milepost	Location	Jurisdiction	Potential Contamination
0.0 - 42.0	El Mirage Road	Adelanto	Leaking tank
14.0	U.S. Route 395	San Bernardino County	Leaking tank
55.0	Cajon Boulevard	County of San Bernardino	Landfill
82.0	Foothill Boulevard	Rancho Cucamonga	Arco leaking tank Petroleum Property leaking tank
88.5 - 88.7	Milliken Avenue	Ontario	
88.7 - 92.7	Mission Boulevard	Ontario	Power Flo Battery Company
92.0	Vineyard Avenue	Ontario	Fluor Corporation underground tank
94.2	Euclid Avenue	Ontario	Arco Service Station and Shell Service Station leaking tanks
95.4	Mountain Avenue	Ontario	Unocal Service Station and Quality Gas leaking tanks
96.5	Central Avenue	Montclair	Goodyear Tire Center leaking tank; Mobil Service Station leaking tank
119.5	Peck Road	South El Monte/ Los Angeles County	Leaking tank
119.5 - 122.0	Durfee Road	South El Monte/ Los Angeles County	Service station leaking tank
124.0	Beverly Boulevard	Pico Rivera	Yellow Transit Company leaking tank; Yellow Freight Systems leaking tank
125.0	Whittier Boulevard	Pico Rivera	Rosens Electrical Equipment Company/Texaco Service Station leaking tank
126.3	Slauson Avenue	Pico Rivera	Los Angeles County Agricultural Commission underground tank
128.0	Florence Avenue	Downey	Empire Oil Station leaking tank
129.0	Firestone Boulevard	South Gate	Mobil and Unocal leaking tank

TABLE 4.1.1-3
Potential Contaminated Soil Sites for the Proposed Cajon Pipeline Project

Milepost	Location	Jurisdiction	Potential Contamination
130.0	Imperial Highway	South Gate	Shell Service Station leaking tank
132.0	Rosecrans Avenue	Paramount	Southwest Casting
134.0	Atlantic Boulevard	Long Beach	Mobil Oil Company leaking tank
135.0	Artesia Boulevard	Long Beach	Chevron Station leaking tank; Crown Bowl leaking tank
136.0	Long Beach Boulevard	Long Beach	Shell Oil Service Station; Jiffy Lube leaking tank
139.5 - 140.9	Carson Street	Carson	Mobil Oil and Unocal leaking tanks

Source: Cortese List.

Slope Stability

Slope gradients along this section of the route are typically less than 20 percent. In addition, the route does not cross any landslides. A large landslide is present in the Cajon Pass, where an approximately 1,500 foot wide section of the hillside on the west side of Cajon Creek has failed. This landslide will not affect the pipeline as it is located across Cajon Creek from the proposed route. A portion of the pipeline route Calnev slope (M.P. 59) near M.P. 67 is located at the base of steep slopes and south of Cajon Wash (M.P. 73) would require construction on slopes as steep as 20 percent.

Groundwater

Groundwater through the mountain segment of the pipeline route is present in limited quantities; in the alluvium at the base of the mountains and in greater amounts in the alluvium of Cajon Canyon, Lone Pine Canyon, and Lytle Creek.

Soils

The mountain segment of the proposed Cajon Pipeline is not covered by a U.S. Department of Agriculture Soil and Conservation Service Survey. However, based on the arid climate and underlying alluvium and/or bedrock, these soils are expected to be low in organic matter and are probably never moist for as long as three consecutive months. In general, their suitability as topsoil is believed to be low. Only one potential contamination site (Cajon Landfill) at some distance from the pipeline route was identified in this segment (Table 4.1.-3).

Minerals

The mountain segment of the pipeline route traverses alluvial sediments derived from crystalline rock of the San Gabriel and San Bernardino mountains. This sediment represents a regional source of sand, gravel, and crushed rock. The California Division of Mines and Geology (CDMG), has identified the Lytle Creek fan and the Cajon fan as a Regionally Significant Resource Area. However, CDMG has designated a 200 foot corridor on each side of the I-15 as an area of non-significance.

Urban Segment

General

The urban segment of the pipeline runs from Lytle Creek near the northeast corner of the City of Rancho Cucamonga to the City of Carson, a distance of approximately 60 miles. Elevations along this segment range from 1,900 feet at Lytle Creek to 30 feet in Carson with slope gradients of less than 1 percent.

Geology

Earth materials to be encountered through this segment consist primarily of recent alluvial materials and artificial fill. No landslides were encountered along this section of the route. Geologic conditions along this segment of the pipeline are shown on maps 12 through 26 in Appendix A.

Faults and Seismicity

The major faults affecting the urban segment of the Cajon Pipeline are the Cucamonga, Whittier and Newport-Inglewood faults.

Slope Stability

The proposed Cajon Pipeline does not cross any landslides or steep slopes along the urban segment of the alignment.

Groundwater

The urban segment of the Cajon Pipeline crosses portions of the Lytle Creek, Chino, Puente, San Gabriel, Central and West Coast groundwater basins. Shallow groundwater conditions of 50 feet or less are evident throughout the Puente Valley (San Jose Creek), Whittier Narrows, and Long Beach Harbor areas of Los Angeles County. Water levels 10 to 20 feet higher are not unusual and the groundwater level rises to the ground surface during periods of sustained rainfall or runoff in the Whittier Narrows and Rio Hondo basin.

Groundwater production for domestic purposes is generally from aquifers more than 200 feet deep. Groundwater recharge occurs in the Whittier Narrows and Rio Hondo spreading grounds. The shallow groundwater in these areas provides a direct flow path to the deeper production aquifers.

Soils

The soil series in the Chino and Los Angeles basins include the Oceano, Ramona-Placentia, Tujunga-Soboba, Chino, Hanford, Cropley, Yolo, and Tujunga-Delhi series. These soils range from clay to loamy sand. The granular soils are typically excessively to well drained, while the clay and clay loams are moderately to poorly drained. The soils water erosion potential is generally low. Other than exceptions of the Hanford, Cropley, and Yolo series, the suitability of these soils as topsoil is generally poor. A number of potentially contaminated soil sites were identified for this segment of route (Table 4.1.1-3). The majority of the locations are associated with service station leaking tanks as is normally found on most major roads.

Subsidence

Subsidence has occurred in the past in southern California due to four major causes: tectonic activity, ground-water extraction, hydrocompaction, and oil and gas withdrawal. Subsidence occurred in the Wilmington-Long Beach area as early as 1930 due to petroleum extraction. By 1960 maximum subsidence of 27 feet had been measured on the eastern end of Terminal Island. Near the oil terminal locations in Carson, 1.5 to 2 feet of subsidence was measured. Water injection was begun in 1953 and by 1963 subsidence had largely been halted. Mitigation of subsidence is undertaken as a regional solution and, therefore, should not impact the proposed project.

Minerals

The proposed route will pass through the Montebello and Wilmington oil fields. In the Montebello area, the route comes within close proximity to numerous plugged and abandoned, active and inactive oil fields. The Pipeline will avoid any abandoned wells.

4.1.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative runs directly south from 12-Gauge Lake for 1.5 miles and then southwest for a distance of 11.5 miles to where it joins the proposed route at U.S. 395. Elevations range from approximately 2,280 feet to 2,720 feet, and slope gradients along this stretch average less than 2 percent. The geology, soils and groundwater for this segment are as described for the Mojave Desert in Section 4.1.1. The only major fault encountered along this segment is the Helendale fault approximately 7 miles from 12-Gauge Lake. The remainder of the route is as described for M.P. 25 to M.P. 142 of the proposed route.

4.1.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative breaks from the proposed route at approximately M.P. 73 where it crosses to the south side of I-15 and parallels an existing utility corridor. The alternative segment route rejoins the proposed route at M.P. 74. Elevations along this segment vary from 1,920 to 2,200 feet. Geology, soil and seismicity and groundwater is as described in Section 4.1.1. The remainder of the route is as described for the proposed route.

4.1.4 M-70 PIPELINE

The information in this section is summarized from the Draft Environmental Impact Report Statement on the proposed M-70 Pipeline replacement and optimization project.

Regional Geology

The proposed M-70 Pipeline route is situated within three Physiographic Provinces: the South Coast Ranges, the Transverse Ranges, and the Penninsular Ranges. Approximately the first four miles of the pipeline are situated in the South Coast Ranges Province. This province consists of numerous sub-parallel, northwest-southwest trending elongate ranges with intervening alluvial basins. The M-70 Pipeline route begins at the Lebec Station. From the pumping station the proposed pipeline route is located in Castaic Valley. The valley is characterized by low relief and is underlying Quaternary alluvium which overlies Mesozoic granitic rocks.

From the San Andreas fault to the southern border of the Santa Monica Mountains (from M.P. 4 to M.P. 72) the proposed route traverses the Transverse Ranges Province. The structural and topographic trend in the Transverse Ranges is generally east-west, and geographically very diverse. The route traverses Ridge Basin for the next 28 miles. These valleys are filled with relatively shallow alluvial deposits which are underlain by Pliocene sedimentary rocks of non-marine origin. The route then follows the Castaic Valley and Santa Clara Valley filled with Quaternary alluvium and terrace deposits of variable depth. After crossing the Santa Clarita Valley, the pipeline route passes through the Santa Susana Mountains and Mission Hills. The mountains along this portion of the route are characterized by moderate to steep slopes and deeply incised canyons underlying by Pleistocene and Pliocene age sedimentary rocks.

From the base of the Mission Hills, the M-70 Pipeline route crosses the San Fernando Valley, which is filled with Quaternary age alluvium. South of the San Fernando Valley the proposed route crosses the Santa Monica Mountains along Sepulveda Boulevard. The northern and southern flanks of the Santa Monica Mountains are underlain by middle and upper Miocene sedimentary rocks. A wedge of Cretaceous age sedimentary rocks is also present along the southern base of the mountains. The central higher portion of the mountains is underlain by Jurassic and Triassic sedimentary rocks.

South of the Santa Monica Mountains, the proposed route crosses the western portion of the Los Angeles coastal plain to its terminus at the Torrance refinery. The proposed route traverses the edge of the Baldwin Hills, where it passes over gentle sloping terraces. The Baldwin Hills along the Newport-Inglewood fault zone are comprised of Pleistocene and Pliocene age marine sedimentary and terrace deposits.

Regional Faulting and Seismicity

The major active and potentially active faults crossed by the proposed M-70 Pipeline route are listed in Table 4.1.5-1. In addition to these faults, several smaller faults which exhibit evidence of displacement during the Late Pleistocene are crossed by the pipeline route in the Ridge Basin. However, these faults are probably secondary faults to the larger faults in this area and are considered to have a much lower potential to experience significant displacement or generate significant earthquakes. In general, faults considered to be active have the greatest potential to generate damaging earthquakes and ground surface rupture.

Slope Stability

The M-70 Pipeline route traverses several areas where slope failures or landslides are known to occur, or where the potential exists for slope failure. Potential for slope failure was assumed in areas where the proposed pipeline route traverses hills and mountains with steep slopes underlain by sedimentary rocks. In addition, many portions of the pipeline route are located near the base of steep slopes. If excavation were to occur at or very near the slope base where the slope is unstable, slope stability could be affected. Consequently, these areas were also identified as having a potential for slope failure. In general, areas along the pipeline route considered to have potential for slope failure are the steep slopes of Ridge Basin, and the Santa Susana and Santa Monica Mountains.

Numerous slope failures are present in the Ridge Basin area. The unstable slopes are generally underlain by Miocene and Pliocene sedimentary bedrock. Areas of slope failure have been identified along the proposed pipeline route between Lower Hungry Valley (M.P. 15) and Newhall (M.P. 47). Weber documented several known bedrock and surface slides that are along the pipeline route between Lower Hungry Valley and Castaic.

Large and small scale slope failures are present in the Santa Susana Mountains. Slope failure is commonly due to slippage of bedrock on moderate-to-steep slopes underlain by fine grained Miocene and Pliocene sedimentary rocks. Debris flows, rockfalls, and slumps are also common in the area.

The steep slopes of the Santa Monica Mountains are also susceptible to slope failures during periods of extreme rainfall or strong movement. In addition, Stole has reported possible landslides at the southern end of the Sepulveda Boulevard tunnel, where Mulholland Drive crosses, and possible slope failure or fill settlement on Sepulveda Boulevard in the area near Mount Saint Mary's College.

TABLE 4.1.5-1
Summary Of Significant Faults
(M-70 Pipeline)

Fault	Most Recent[1,2] Geologic Displacement	Historic[1] Seismicity	Approximate Milepost
Garlock	HA	X	2.5-4
San Andreas	HA	1857 (M 7.9)	4.5-5.5 6.5-8.5
Clear Water	PA		15.5
San Gabriel	A		36-36.5
Holser	PA		38.5-40.5
Santa Susana	HA	1971 (M 6.6) 1976 (M 4.6)	50-51
San Fernando	HA	1971 (M 6.6)	
Mission Hills	PA or A		52.5 and 55
Northridge Hills	PA or A	X	57.5
Benedict Canyon	PA or A		71
Hollywood	A	X	72
Santa Monica	PA	X	73.5

HA = Historically active (surface fault rupture associated with a recorded earthquake)
A = Active (evidence of Holocene surface faulting)
PA = Potentially active (evidence of Late Quaternary surface faulting)
X = Recorded seismicity associated with the fault
1857 = (M 8+) = Date and magnitude of significant historic earthquake
[1] Ziony and Yerkes, 1985
[2] Ziony and Jones, 1985

Soils

Soils along the proposed M-70 Pipeline route are highly variable. Soils in the vicinity of the proposed route include loam, gravelly coarse sands, silt loam, silty clay loam, clay loam, clay, and gravelly clay. Soil is generally deep to very deep along the proposed route and surface slopes range from near level (2 to 5 percent) to very steep (30 to 75 percent). Generally, soils on the relatively steeper slopes (10 to 75 percent) have a higher erosion hazard.

Subsidence

Significant subsidence due to pumping of ground water or oil and gas has not been documented in areas which the proposed M-70 Pipeline route directly traverses. However, subsidence due to ground water overdraft or oil and gas withdrawals has been reported in areas near the proposed pipeline route. Subsidence of the ground surface due to withdrawal of petroleum in the Inglewood oil field (Baldwin

Hills) has been documented. The Inglewood oil field is located directly northeast of the proposed pipeline route in the Baldwin Hills. Historic or occurring subsidence, due to the withdrawal of petroleum, has also been reported in Wilmington-Torrance oil field. The pipeline route is about 1 mile north of the Torrance oil field. The main subsidence has been associated with the Wilmington oil field in the Terminal Island area located approximately 5 miles southeast of the pipeline route.

4.1.5 PACIFIC PIPELINE

The information in this section is summarized from the Proponent's Environmental Assessment for the Proposed Pacific Pipeline project.

Regional Geologic Setting

The Pacific Pipeline is situated within two physiographic provinces: the Transverse Ranges and the Peninsular Ranges. The Transverse Ranges are summarized by east-trending ridges and valleys that transect the northwest from Point Arguello into the Mojave Desert and are about 50 miles wide. The Los Angeles Basin is the northern limit of the Peninsular Ranges, which extends south to Mexico.

The proposed Pacific Pipeline route traverses diverse and complex topography. The topographic features range from nearly flat river valleys and basins to mildly or steeply sloping coastal plains and terraces and steep mountain slopes. Elevations in this region range from sea level to peaks up to 10,000 feet mean sea level (msl).

The Pacific Pipeline from near Gaviota to Ventura along the Santa Barbara coastal area is near sea level. The geologic units for the route in this area are Quaternary and Tertiary sedimentary rocks and alluvium. From Ventura the proposed pipeline proceeds east along the Santa Clara Valley to Santa Clarita. The topography is low, and Quaternary alluvium is the main geologic unit encountered. The route proceeds south from Santa Clarita to Sylmar over the Santa Susana Mountains with moderate to high topographic relief. Quaternary and Tertiary sedimentary rocks are exposed at the surface along Old San Fernando Road, which parallels the proposed route. The route proceeds south from Sylmar to Glendale in the San Fernando Valley mainly over low relief Quaternary alluvium. The route passes the eastern extent of the Santa Monica Mountains near Glendale. Some Tertiary rocks are exposed near the project route, but Quaternary alluvium of the Los Angeles River is the main geologic unit at the surface. From the City of Los Angeles the route runs south over the Los Angeles River basin to the terminus of the proposed pipeline in Wilmington and El Segundo. The Los Angeles River basin has low topographic relief and is covered with a fairly thick sequence of alluvium.

Regional Faulting And Seismicity

The Pacific Pipeline route traverses a tectonically active and complex region that is characterized by moderate to locally high historic seismicity. The region includes two major seismically active fault systems: 1) the northwest-trending right-lateral strike slope San Andreas and related faults, such as the

Newport-Inglewood fault zone, and 2) the west-trending reverse faults of the Transverse Ranges, such as Ventura, San Cayetano, and Santa Susana faults. Nearly all historically damaging earthquakes and many smaller earthquakes can be associated with mapped Quaternary faults that are seismically active today.

The area traversed by the proposed Pacific Pipeline route is characterized by numerous geologically young faults. Forty active or potentially active faults have been identified within five miles of the pipeline route; nineteen of them intersect the route. Crossings of active and potentially active faults are listed in Table 4.1.5-1. Those with the greatest risk of surface rupture are the Santa Susana and San Fernando faults.

Slope Stability And Subsidence

Slope failure can occur in areas of steep hillsides or along coastal areas with steep cliffs that are underlying by weak geologic units. The Rincon Formation along the coastal portion of the Pacific Pipeline and the Castaic Formation in the Santa Susana Mountains have been identified as particularly susceptible to slope failure.

The proposed Pacific Pipeline route passes several areas along the Santa Barbara coast that are prone to shore regression where slope failure might occur if the shore was not stabilized or maintained. The only evidence of recent slope failure along the coastal portion of the route was at Ortega, where the Southern Pacific Railroad (SPRR) had added fill to stabilize the railroad grade. Minor slope movement might be expected in this area; however, the active maintenance by the SPRR should prevent any significant failures. On steep hillsides in the areas of the Santa Susana Mountains, potential for slope failure exists, but the proposed route crosses this area adjacent to the existing highways, where slope failures would not be expected due to grading. Some areas identified as susceptible to liquefaction in the previous seismicity and faulting discussion may experience some subsidence during seismic events.

TABLE 4.1.6-1
SUMMARY OF ACTIVE AND POTENTIALLY ACTIVE FAULTS ALONG THE PACIFIC PIPELINE ROUTE

Name of Fault	Fault Length in Miles (Approx.)	Activity (2,3)
Erburu	1.4	P
More Ranch	9.5	
Goleta	3	P
Mesa-Rincon	21	P
Fernald Point	1.3	P
unnamed	3	
Carpinteria	3	P
Red Mountain	15	S,A*
Javon	4.5	S,A
Pitas Point-Ventura	36	S,A
Oak Ridge*	37	S,A
Oak Ridge splay 2	0.7	P
Oak Ridge splay 1	2.7	P
San Cayetano	30	S,A
Holser	13	P
Santa Susana	25	S,H*
San Fernando	10	S,H*
Verdugo	14	A
Hollywood	12	A?
unnamed	0.9	S,A?

(1) Faults shown on Figure 3.3-3 and Map 3.1-1.

(2) Activity:
- H - Historically Active with date;
- A - Active (active in Holocene time -last 11,000 years);
- P - Potentially Active (active in Quaternary time - last 2 million years);
- S - Alquist Priolo special study zone.

(3) ? indicates uncertainty in age of offset units.

(4) Principal references;
1 - Hart, 1990; 2 - Jennings and Strand, 1969; 3 - Moore and Tabir, 1979; 4 - Ventura County, 1990; 5 - Yerkes and others, 1981; 6 - Yerkes and Lee, 1979; 7 - Ziony and Yerkes, 1985; 8 - Ziony and Jones, 1989; 9 - Treiman, 1989; 10 - Treiman, 1990.

Soils

Soils along the Pacific Pipeline route are highly variable. Soils in the vicinity of the project route include loam, sandy loam, gravelly coarse sands, silt loam, silty clay, loam, clay loam, clay and gravelly clay. Soil is generally deep to very deep along the pipeline route, and surface slopes range from near level (2 to 5 percent) to very steep (30 to 75 percent). Generally, soils on the relatively steeper slopes (10 to 75 percent) have a high erosion hazard.

4.1.6 FOUR CORNERS PIPELINE

Regional Geologic Setting

The existing Four Corners Line 90 Pipeline begins at Cadiz in San Bernardino County and extends 185 miles south and southeast to Los Angeles. The pipeline crosses portions of the Mojave Desert and the Transverse Ranges Geomorphic Provinces. These provinces are described in Section 4.1.1.

Regional Faulting and Seismicity

The Four Corners Pipeline route traverses a seismically active region that has experienced several large earthquakes in the last 150 years. The major active and potentially active faults crossed by the proposed route are listed in Table 4.1.7-1.

Soils

Soils along the Four Corners Pipeline route are highly variable. Soils in the vicinity of the proposed route include loam, gravelly coarse sands, silt loam, silty clay loam, clay loam, clay and gravelly clay. Soil is generally deep to very deep along the pipeline route, and surface slopes range from near level (2 to 5 percent) to very steep (30 to 75 percent). Generally, soils on the relatively steeper slopes (10 to 75 percent) have a high erosion hazard.

Slope Stability

The Four Corners Pipeline traverses several areas where slope failures or landslides are known to occur, or where there is a potential for slope failure. The pipeline does not cross any landslides or steep slopes along the Mojave Desert segments of the alignment. The steep slopes of the San Bernardino Mountains are susceptible to slope failures during periods of extreme rainfall or strong movement. South of the San Gorgonio Mountains the pipeline does not cross any landslides or steep slopes.

TABLE 4.1.7-1
Summary of Active and Potentially Active Faults (Four Corners Pipeline)

Fault	Most Recent Geologic Displacement[1]
Bullion	PA
Mesquite	PA
Pinto Mountain	PA
Mission Creek/San Andreas	A
Banning/San Andreas	A
San Jacinto	A
Chino	PA
Whittier-Elsinore	A

PA = Potentially active (evidence of Late Quaternary Surface faulting)
A = Active (evidence of Holocene Surface faulting)
[1] = Ziony and Yerkes, 1985

ENDNOTES

1. Bortugno, E.J. and Spittler, T.E., 1986, Geologic Map of the San Bernardino Quadrangle, California Division of Mines, Regional Geologic Map series, No. 3A.

2. Working Group on California Earthquake Probabilities, 1988, Probabilities of fLarge Earthquakes Occurring in California on the San Andreas Fault, USGS Open File Report 88-398.

3. Wesnousky, S.G., 1986, Earthquakes, Quaternary Faults, and Seismic Hazard in California, Journal of Geophysical Research, Vol.91, P. 12, 587-631.

4. Ibid.

5. Ibid.

6. Rick Grundy, BLM Geologist, Personal communication, October 16, 1992.

4.2 ONSHORE WATER RESOURCES

4.2.1 CAJON PIPELINE

This section describes the regional and local water resources crossed or located adjacent to the proposed Cajon Pipeline route, and how construction and operation of the pipeline would affect these resources. The analysis is based upon field surveys, review of topographical maps and discussions with appropriate agencies.

Surface Water and Water Quality

Generally, the region is classed as desert or semi-arid with hot, dry summers and mild humid winters. Average annual rainfall varies along the route from 27 inches in the San Gabriel Mountains to 14 inches in the Los Angeles basin. Approximately 85 percent of the rainfall occurs from November through April.

Streams of this region are highly intermittent and flow generally does not occur for the most part of the year. All streams are subject to great extremes in flow variations and are highly responsive to localized heavy precipitation events. The Cajon Pipeline project crosses three drainage basins between 12-Gauge Lake and Carson: the Mojave River drainage basin of the High Desert, the Santa Ana River drainage basin and the Los Angeles River drainage basin of the Los Angeles Basin. The major streams that would be crossed by the pipeline are shown in Table 4.2.1-1. Stream characteristics for major streams are shown in Table 4.2.1-2. Due to the highly intermittent nature of other minor streams and relatively small drainage basins along the route, associated flow data is not available. The characteristics of the major rivers and streams are described below by drainage basin.

Water quality in surface streams is highly variable. Surface waters are classified by beneficial uses, both existing and potential future uses. Within California, 21 beneficial uses have been defined. Each stream may receive as many designated uses as appropriate. These beneficial uses are employed to define water quality objectives. The uses of the streams crossed by the pipeline route are primarily for municipal and domestic supply, agricultural supply, industrial service supply, and groundwater recharge. Other uses are limited but may occur in other reaches of the stream (e.g. cold and warm water habitat in the upstream reaches and tributaries of the Santa Ana River).

Mojave River Drainage Basin

The Mojave River drainage basin consists of small, broad valleys, or closed drainage basins, separated by isolated hills and low mountains. The closed basins end in playas which contain rain only after heavy rainfall. The Mojave River originates in the foothills of the San Bernardino Mountains at the junctions of

TABLE 4.2.1-1
Stream Crossings Along Route Of Cajon Pipeline

M.P.	Stream	County	Status[a]	Crossing Type[b]	Bed Type
--	Buckhorn Wash	San Bernardino	I	TRN	Sand
39	Fremont Wash	San Bernardino	I	TRN	Sand
51.8	California Aqueduct	San Bernardino	NA	BORE	Lined
53.1	Unnamed Wash	San Bernardino	I	TRN	Sand
54.4	Manzanita Wash	San Bernardino	I	TRN	Sand
63.8	Crowder Canyon	San Bernardino	P	TRN/BORE	Sand/ Gravel
65.5	Cleghorn Canyon	San Bernardino	P	TRN	Sand/ Gravel
66.2	Unnamed	San Bernardino	P	TRN	Sand/ Gravel
67.5	Unnamed	San Bernardino	P	TRN	Sand/ Gravel
72.0	Cajon Creek	San Bernardino	P	TRN	Sand/ Gravel
73.2	Sycamore Canyon	San Bernardino	I	TRN	Sand/ Gravel
74.3	Lytle Creek	San Bernardino	I	TRN	Sand/ Gravel
80.1	Etiwanda Creek	San Bernardino	I	BORE	Lined
83.0	Day Creek	San Bernardino	I	BORE	Lined
83.88	Day Creek	San Bernardino	I	BORE	N/A
91.3	Cucamonga Creek	San Bernardino	I	TRN	Lined
93.2	San Antonio Creek	Los Angeles County	I	TRN	Lined
104	San Jose Creek	Los Angeles County	I	TRN	Lined
108.7	Diamond Bar Creek	Los Angeles County	I	BORE	Lined
110-118	San Jose Creek Creek	Los Angeles County	P	BORE	Lined
119.3	San Gabriel River	Los Angeles County	P[d]	BORE	Gravel
122	Whittier Narrows Dam	Los Angeles County	NA	TRN	N/A
124.1	Rio Hondo	Los Angeles County	P[d]	BORE	Lined
135.7	Los Angeles River	Los Angeles County	P[d]	BORE	Lined
138.7	Compton Creek	Los Angeles County	P	BORE	Lined
141.2-142.0	Dominguez Channel	Los Angeles County	I	TRN/ BORE	Lined sides/ unlined bottom

---

[a] I = intermittent, P = perennial, NA = not applicable

[b] Types of stream crossings: ROAD = pipeline within paved or dirt roadway, above culvert or channel; SPN = pipeline spans bridge or channel; TRN = pipeline trench across drainage course; BORE = jack and bore under channel.

[c] Stream crossings of the San Jose Creek occur between M.P. 110 to M.P. 118. [d] Stream flow in these channels is regulated by upstream flood control reservoirs, spreading basins and debris basins.

Source: EIP Associates, Cajon Pipeline Company, 1991.[1]

TABLE 4.2.1-2
Stream Flow Characteristics for Major Streams Crossed by Cajon Pipeline

River	Discharge (ft^3/sec)			Period of Record	Drainage Area at Gauge (sq.mi)
	Maximum	Minimum	Average		
Cajon Creek near Keenbrook	1,780 (Feb. 11, 1973)	2.2 (Dec. 16, 1975)	8.03	Oct. 1972-77 & 1984	56.5
Lytle Creek near Fontana	35,900 (Jan. 25, 1969)	No flow at most times of the year	18.8[a]	Oct 1918 - Sep 1984	36.6
Cucamonga Creek at Merrill Ave.	16,100 (Feb. 27, 1983)	No flow at most times of the year	2.74	1969 - 76	75.8
San Gabriel River at Peck Road	46,600 (Jan. 25, 1969)	No flow for parts of most years.	[b]	1955 - 57 & Oct, 1963 to present	353
Rio Hondo Below Whittier Narrows Dam	38,800 (Jan. 25, 1969)	No flows at most times of the year.	[c]	Oct, 1966 to present	124
Los Angeles River at Long Beach	129,000 (Feb. 16, 1980)	No flow at times in specific years.	215	Oct, 1930 - Sep. 1983	827

(a) Diversions occur upstream of the gauge for power development and irrigation.

(b) Flow regulated by San Gabriel, Cogswell and Santa Fe flood control reservoirs. Diversions also occur upstream of the gauge for irrigation, power development and groundwater replenishment.

(c) Flow is regulated by Whittier Narrows flood control reservoir.

Source: U.S. Geological Survey, Water Resources Data Report CA-84-1, California Water Year, 1984, Volume 1.

West Fork and Deep Creek. It continues north to Victorville, northeast to Afton and onto its terminus in Soda Lake. Flood waters occasionally reach Soda Lake but soon evaporate. Perennial flow occurs in the mountains and near Victorville, Harvard and Afton.[2] Major tributaries of the Mojave River which will be crossed by the pipeline route include: Buckhorn Wash, Fremont Wash, and Manzanita Wash. The Mojave River itself will not be crossed by the pipeline. These streams are comprised of large wash areas and are unlined. Beneficial uses for the Mojave drainage include: agricultural supply, groundwater recharge, recreational uses, and freshwater and wildlife habitat.[3]

The pipeline route also crosses under the east branch of the California Aqueduct (M.P. 52) which transports water from central California into the eastern part of the Los Angeles Basin. The aqueduct at this location is a concrete trapezoidal channel.

Santa Ana River Drainage Basin

The pipeline route passes over the Cajon Pass, into the Santa Ana River drainage basin, and passes through the Puente Hills. The Santa Ana River and its tributaries drain the southern portions of the eastern San Gabriel Mountains and San Bernardino Mountains. Surface and groundwaters in the upper basin eventually flow through Prado Dam, at the head of the Santa Ana River Canyon, and south into the Orange County coastal basin.

The pipeline route crosses the following tributaries of the Santa Ana River: Cajon Creek, Lytle Creek, Etiwanda Creek, Day Creek, Cucamonga Creek, and San Antonio Creek. In the foothills of the San Gabriel Mountains, Lytle Creek and Cajon Creek fan out at canyon mouths into wide washes. Further from the foothill areas, these two streams are lined for flood control purposes. The pipeline route is located adjacent to recharge basins operated by the San Bernardino Flood Control District on Etiwanda Creek.

The quality of the water within the Santa Ana River basin reflects the influences of local topography and land use. Water in the mountainous areas is generally of high quality, because of its low dissolved mineral content. Surface flows are diverted for domestic use, irrigation and for percolation and recharge of groundwater basins. Beneficial uses for these streams include: municipal, agricultural, industrial, groundwater recharge, power, recreation, wildlife and freshwater habitat.[4]

Los Angeles River Drainage Basin

The pipeline route follows flood control channels within the Los Angeles River basin to its terminus at Carson. The Los Angeles River basin, which includes the coastal plain of Los Angeles, receives surface flow from tributaries draining the Santa Susana Mountains, the Santa Monica Mountains and the San Gabriel Mountains, and discharges to San Pedro Bay. The majority of the waterways within the basin have been replaced with concrete channels as part of a complex flood control drainage system.

The pipeline route crosses the Los Angeles River as well as the following tributaries: San Jose Creek, Diamond Bar Creek, Rio Hondo, and Dominguez Channel. All the streams listed have been concrete lined for the majority of their route except for a portion of the San Jose Creek channel in the vicinity of the Pomona Freeway (M.P. 118), which is unlined and supports thick riparian growth, and portions of the Dominguez Channel which have riprap sides and an unlined bottom.

The pipeline route also passes around the Whittier Narrows flood control dam and is adjacent to the Rio Hondo spreading grounds (M.P. 122 and M.P. 124 respectively). The Whittier Narrows Dam is operated and regulated by the U.S. Army Corps of Engineers for flood control purposes. It acts as a control structure rather than an impoundment to control time releases of flood waters into downstream watercourses.[5] The Rio Hondo coastal basin spreading grounds is operated by the County of Los Angeles Public Works Department. Surface water is diverted by radial gates from the Rio Hondo channel downstream of the Whittier Narrows Dam to conserve local, imported and reclaimed water by recharging the underlying groundwater basin. The facility covers approximately 570 acres, comprising 20 six to ten feet deep basins.[6] The pipeline also passes the Dominguez Gap percolation ponds which act primarily as detention basins for stormwater runoff and secondarily as recharge basins. The basins, which cover over 24 acres on the east and west banks of the Los Angeles River at M.P. 139, are also operated by the County of Los Angeles Public Works Department.

Water quality of the Los Angeles River basin is typical of an urbanized area. It receives significant amounts of urban pollutants, such as oil and grease, bacteria, toxicants and other wastes, carried by street runoff. Beneficial uses for these streams include: groundwater recharge, recreation, wildlife and freshwater habitat.[7]

Flooding

Flood-prone areas along the pipeline route were identified from flood insurance rate maps prepared for San Bernardino and Los Angeles counties. In general, areas subject to flooding include low-lying areas adjacent to active channels in all major stream channels in all major stream valleys. In addition, many of the tributaries flowing into the major streams are subject to flooding. Areas adjacent to the mouths of mountain canyons may also be susceptible to flooding during major storms.

4.2.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative does not cross any additional streams or waterways than the proposed project. The local and regional water resources are as described in Section 4.2.1.

4.2.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative detours between low hills between Cajon Wash and Lytle Creek. The local and regional water resources are as described in Section 4.2.1.

4.2.4 M-70 PIPELINE

The information in this section is summarized from the Draft Environmental Impact Statement/Report on the proposed M-70 Pipeline replacement and optimization project.

Surface Water and Water Quality

The proposed M-70 Pipeline route crosses three drainage basins between Lebec and Torrance. These are: (1) Castaic Lake Valley drainage basin (a sub-basin of the San Joaquin drainage basin), (2) the Santa Clara River drainage basin, and (3) the Los Angeles River drainage basin. The proposed pipeline route would have 71 crossings of streams, aqueducts, or other drainages (Table 4.2.5-1). Generally, the streams are classified as intermittent, although several streams do flow on a permanent basis during average to wet years. All streams are subject to great extremes in flow variations and are highly responsive to localized heavy precipitation events. Because of the highly intermittent nature of the other streams and relatively small drainage basins along the route, associated flow data is not available (flow data collection generally does not occur from any of these streams.) A more detailed description of the three drainage basins follows.

Castaic Lake Valley Drainage Basin

The M-70 Pipeline route originates in the Castaic Lake Valley drainage basin, a small sub-basin of the south-central San Joaquin Valley drainage basin. Castaic Creek, which drains an area of 2 square miles, flows westward into Grapevine Creek. The proposed M-70 Pipeline route crosses three tributaries of Grapevine Creek (M.P. 1.0, M.P. 1.4 and M.P. 1.5). Cuddy Creek is crossed by the pipeline route at approximately M.P. 3.7 and drains an area of approximately 2 square miles. Cuddy Creek flows into Castaic Lake about ½ mile downstream of the pipeline crossing. Outflows from Castaic Lake occur very infrequently.

Santa Clara River Valley Basin

From the crest of the Tehachapi Mountains southeast to State Highway 14, the proposed M-70 Pipeline route crosses into the Santa Clara River basin. The Santa Clara River Basin comprises a major portion of Ventura County and the northern portion of Los Angeles County with minor portions of the basin draining Santa Barbara and Kern counties. The major stream crossed by this segment of the route is the Santa Clara River. Other drainages crossed include Gorman Creek, Piru Creek, Osito Creek, Castaic Creek, Newhall Creek and several unnamed drainages. Many of these canyons drain from the Santa Susana Mountains on the west, with each canyon draining an area generally less than 1 or 2 square miles. Flows in these drainages only occur in response to significant precipitation events.

TABLE 4.2.5-1
STREAM CROSSINGS ALONG THE M-70 ROUTE

Stream	Status[a]	Crossing Type[b]
MP 0-10.0		
Grapevine Creek	I	Road/Trn (3/4)
Gorman Creek	I	Road (8)
MP 10-20.0		
Gorman Creek	I	Road/Trn (2/3)
Flood control channel		Road
Apple Canyon	I	Road
West Fork Liebre Gulch	I	Road
Pyramid Lake	I	Train
MP 20-30		
Pin Creek	I	Spn/Road (2/3)
Osito Creek	I	Road (7)
Canton Canyon	I	Spn
Violin Canyon	I	Road
MP 30-40		
Maple Canyon	I	Trn/Spn (4/1)
Drainage to reservoir	N/A	Road (3)
Villa Canyon	I	Road
Castaic Creek	I	Trn
MP-40-50		
Santa Clara River	P	Trn (2)
Newhall Creek		Road (3)
Weldon Canyon	I	Road/Trn (2/1)
MP 50-60		
Sunshine Canyon	I	Road
Bee Canyon	I	Road
Bull Canyon	I	Road
Bull Creek	I	Road

TABLE 4.2.5-1
STREAM CROSSINGS ALONG THE M-70 ROUTE

Stream	Status[a]	Crossing Type[b]
MP 60-70		
Los Angeles River	P	Bore
MP 70-80		
Ballona Creek	P	Spn

[a] I = intermittent, P = perennial, NA = not applicable

[b] Types of stream crossings:
Road = pipeline within paved or drift roadway, above culvert or channel
Spn = pipeline spans bridge or channel
Trn = pipeline trench across drainage course
Bore = jack and bore under channel

Numbers in parenthesis indicate the number of the crossings of specified stream or waterway (e.g. Road/Train (3/4) indicates three road crossings and four trench crossings.)

Sections of the California Aqueduct and the Los Angeles Aqueduct are located along the proposed M-70 Pipeline route. The California Aqueduct closely parallels the pipeline route from approximately M.P. 11.5 to M.P. 17 where the aqueduct forms Pyramid Lake. The pipeline route crosses the aqueduct at M.P. 14.5 and again at M.P. 20.5.

The Los Angeles Aqueduct parallels the proposed pipeline route in the lower portion of the Santa Clara River Valley Basin in a tunnel starting from approximately M.P. 43. This aqueduct continues to parallel, but does not cross the proposed pipeline route in the Santa Clara River Valley Basin.

Water quality in the Santa Clara River has been monitored by the USGS . The water quality is generally poor because of its naturally high mineral content. The water is highly alkaline (pH ranges from 8.1 to 8.5) and hard (hardness has ranged from 430 to 470 milligrams per liter (mg/l) as calcium carbonate [$CaCO_3$]). Existing beneficial uses of the Santa Clara River surface water include: general municipal, industrial, and agricultural water supplies; fish and wildlife habitats; and water-contact (swimming/wading) and/or non-water contact (boating/fishing) recreation.

Los Angeles River Basin

The proposed M-70 Pipeline route enters the Los Angeles River basin as it continues southward from San Fernando Pass (M.P. 49). Many of the natural streambeds in the area have been replaced with concrete-lined channels, with surplus drainage being directed towards several of debris and overflow basins (e.g., Sepulveda Flood Control Basin, Pacoima Spreading Grounds, and Hansen Dam). The major river crossed in this segment of the route is the Los Angeles River (M.P. 64). Other streams crossed include Bull Creek, Ballona Creek, Centinella River and numerous unnamed drainages. Ballona Creek is a concrete-lined flood control channel that generally has continuous flow.

The proposed pipeline route passes adjacent to the Sepulveda Flood Control Basin (M.P. 63) which serves as a regional collector of storm waters. The Los Angeles Aqueduct parallels the proposed pipeline route from the northern edge of the Los Angeles River Basin to approximately M.P. 53. This aqueduct does not cross the pipeline route.

A summary of water quality measurements for the Los Angeles River in 1988 at the Long Beach station indicates the water is highly alkaline with pH ranging from 8.5 to 10.3 over the year. Over the year, conductivities ranged from 944 to 1,080 micromhos per centimeter (µmhos/cm)(micromhos at 25°). In 1988, Total Suspended Solids (TSS) was quite low, ranging from 8 to 15 mg/l. The water was moderately hard with values ranging from 210 to 250 mg/l as $CaCO_3$. Existing beneficial uses for water in the Los Angeles River include: groundwater recharge, recreation, and wildlife and freshwater habitat.

Flooding

Flood-prone areas along the M-70 Pipeline route were identified from flood insurance rate maps prepared for Los Angeles County. In general, areas subject to flooding include low-lying areas adjacent to active channels in all of the major stream valleys. In addition, many of the tributaries flowing into the major streams are subject to flooding. Areas adjacent to the mouths of mountain canyons may also be susceptible to flooding during major storms.

4.2.5 PACIFIC PIPELINE

The information in this section is summarized from the proponents Environmental Assessment for the Proposed Pacific Pipeline project.

Surface Water and Water Quality

The Pacific Pipeline project would cross approximately 136 streams, wetlands, or drainages in the 170 miles from Gaviota to the existing crude oil transportation networks servicing the destination refineries. Most of these crossings would occur at small, adequately stable, ephemeral drainages or at concrete-lined channels and culverts. A summary of stream crossings for the perennial streams is tabulated in Table 4.2.6-1.

The proposed route traverses three major drainage areas. These are the Santa Ynez Mountains/Coastal Plain region from Gaviota to near Ventura, the Santa Clara River basin from near Ventura to the San Fernando Pass area, and the Los Angeles River basin from San Fernando Pass to the destination refineries.

TABLE 4.2.6-1
Perennial Stream Crossings Along the Pacific Pipeline Route

M.P.	Stream	Crossing Type
0.9	Canada San Onofre	Trench Upstream
2.0	Canada de Molino	Trench/Existing Culvert Upstream
3.6	Arroyo Hondo	Bridge Upstream
4.9	Arroyo Quemado	Trench Upstream
6.1	Tajiquas Creek	Trench Upstream
8.0	Canada del Refugio	Trench Upstream
9.4	Canada del Corral	Trench Downstream
10.8	Canada del Capital	Trench/Existing Culvert
12.0	Las Llagas Canyon	Trench Upstream
40.7	Santa Monica Creek	Bore Upstream
40.9	Franklin Creek	Bore Upstream
58.7	Prince Barranca	Use existing crossings
60.7	Arundell Barranca	Bore
67.3	Brown Barranca	Trench
70.2	Todd Barranca	Trench
75.4	Santa Paula Creek	Trench
83.1	Sespe Creek	Trench
92.2	Piru Creek	Trench
102.7	Castaic Creek	Trench
105.9	Santa Clara River	Trench
115.8	Los Angeles Aqueduct	Bore
139.0	Los Angeles River	Bridge
153.4	Compton Creek	Bridge
158.0	Dominguez Channel	Bridge

Source: Pacific Pipeline Company.

Santa Ynez Mountains/Coastal Plain Region.

The Santa Ynez Mountains/Coastal Plain region is typified by steep, relatively short drainages originating in the Santa Ynez Mountains north of the proposed right-of-way. Streams flow southward to the coast. Both intermittent and perennial streams occur along this portion of the proposed route, flowing generally in response to local precipitation events. Most channels are incised, frequently within deep canyons, as a result of the steep gradient from the mountains to the ocean shoreline. Channelization has been conducted on several streams, particularly in urban areas. Goleta Slough and Carpinteria Salt Marsh are estuaries that occur in the coastal plain region of the project.

Santa Clara River Basin.

The Ventura and Santa Clara rivers reach the Pacific coastline in or near the City of Ventura. These are large, braided or meandering (depending on the reach), shifting sandbed channels that occur in wide floodplains. Both the Ventura and the Santa Clara Rivers may have periods of no flow during extremely dry seasons. Major tributaries to the Ventura River include Canada Larga, Coyote Creek, and San Antonio Creek, located about 4.5, 5.5 and 9 miles north of the Pacific Pipeline project route, respectively. Tributaries of the Santa Clara River, such as Ellsworth Barranca, Todd Barranca, Santa Paula Creek, Sespe Creek, and Piru Creek emerge from the mountains and flow onto extensive alluvial fans prior to converging with the river.

High sediment-transport rates are characteristic of the Santa Clara River throughout its length. Sand and gravel mining and ground-water withdrawals have affected the flow regime and geometry of the Santa Clara River, particularly in the reach below Santa Paula. Sand and gravel mining, now extensively regulated has, in previous years, particularly contributed to channel migration, scour, and aggradation in the Santa Clara River.

Los Angeles River Basin.

The proposed Pacific Pipeline would pass over the divide between the Santa Clara River basin and the Los Angeles River basin via a route up Gavin Canyon, parallel to Interstate 5. These mountain watersheds are relatively small (1 to 5 square miles) and drainages typically flow in response to localized precipitation. Slopes are steep, frequently over 100 percent in grade. Major tributary drainages typical of the locale include Pico Canyon, Towsley Canyon, and Rice Canyon. The Los Angeles Aqueduct would be crossed by the pipeline at about M.P. 115.5.

Extensive channel controls, consisting of concrete-lined channels, drop structures, and debris and flood control basins, have replaced most of the natural streambeds. Major tributaries of the Los Angeles River include Pacoima Wash, Tujunga Wash, Verdugo Wash, Arroyo Seco, and Compton Creek.

Flooding

Flood-prone areas along the proposed route were identified by inspection of flood insurance rate maps published for Santa Barbara, Ventura, and Los Angeles counties by the Federal Emergency Management Agency (FEMA). The most flood-prone areas are low-lying zones adjacent to flow channels, and areas where man-made features have constricted the natural floodplain, causing higher flood levels in the vicinity.

In Santa Barbara County, the primary stream crossings within the 100-year floodplain are Dos Pueblos Canyon, the Carneros-Las Vegas Creeks area, the Oak-San Ysidro-Romero Creeks area, and El Estero (Carpinteria Salt Marsh). The initial pump station proposed for the project would be located outside of the 100-year floodplain at Canada Alcatraz as identified by the flood insurance rate map.

In Ventura County, the primary crossings within the 100-year floodplain are the Ventura River, Ellsworth Barranca, Santa Paula Creek, and Sespe Creek. (The Ventura River would be crossed using an existing 22-inch diameter pipeline). In Los Angeles County, the primary crossings within the 100-year floodplain are San Martinez Grande, San Martinez Chiquito, Castaic Creek, and the Santa Clara River near M.P. 106.

4.2.6 FOUR CORNERS PIPELINE

Four Corners Line 90 Pipeline is an existing pipeline. Construction would be limited to four new pumping stations and three new heating stations. The pipeline crosses four drainage basins: Colorado River, Whitewater River/San Gorgonio River, San Jacinto River and Santa Ana River. The pipeline crosses numerous intermittent streams. The major streams along the pipeline route include: Whitewater River, San Gorgonio River, Temescal Wash and Santa Ana River.

The northern 75 miles of the Four Corners Pipeline route are within the Colorado River drainage basin. The pipeline skirts the playas of Bristol Lake within the Cadiz Valley and passes over the Sheep Hole Mountains to Morongo Valley. Streams of this region are highly intermittent and flow generally does not occur for most parts of the year. From Morongo Valley to Beaumont (approximately 28 miles), the route is within the drainage of the San Gorgonio and Whitewater Rivers which drain to the Salton Sea.

From Beaumont to Riverside (approximately 18 miles) it crosses the drainage of the San Jacinto River, and the remainder of the route to Anaheim is within the drainage of the Santa Ana River. The San Jacinto River receives flows from the southwestern slopes of the San Jacinto Mountains, flows in a southwesterly direction to Canyon Lake and eventually into Lake Elsinore. The Santa Ana River drainage basin is described in Section 4.2.1.

ENDNOTES

1. Cajon Pipeline Company, Cajon Pipeline Project Application prepared for the U.S. Department of Interior, Bureau of Land Management, California State Lands Commission, January 24, 1991.

2. State of California, Department of Water Resources, Mojave River Ground Water Basins Investigation, Bulletin No. 84, August 1967.

3. California Regional Water Quality Control Board, South Lahontan Region, Water Quality Control Plan, South Lahontan Basin, 1987.

4. California Regional Water Quality Control Board, Santa Ana Region, Water Quality Control Plan, Santa Ana River Basin, 1984.

5. Terry Weatherspoon, Operations, U.S. Army Corps of Engineers, Personal Communication, November 18, 1991.

6. Los Angeles County Department of Public Works, The San Gabriel River and Montebello Forebay Water Conservation System.

7. California Regional Water Quality Control Board, Los Angeles Region, Water Quality Control Plan, Los Angeles River Basin, 1978.

4.3 BIOLOGICAL RESOURCES

4.3.1 CAJON PROPOSAL

This section addresses the plant and animal communities encountered along the proposed Cajon Pipeline route. In addition, direct impacts resulting from construction and potential spills are discussed.

Formal consultation under Section 7 of the Endangered Species Act of 1973 as amended is being undertaken through the Bureau of Land Management with the U.S. Fish and Wildlife Service. Consultation is also underway with the California Department of Fish and Game in accordance with the California Endangered Species Act 2081 permitting regulations. The project must conform to the Biological opinion and there will be no decision until the Biological Opinion is received. Extensive field survey work described below has been utilized in the development of a Biological Evaluation/Biological Assessment for the consultation. The Biological Evaluation/Biological Assessment and the results of the field work are contained within the Technical Appendix I of this document.

Biological surveys of the pipeline route focused on the portion of the route that passes through non-urbanized habitats, namely, from 12-Gauge Lake to the City of Fontana. An initial botanical survey of a portion of the Cajon Pipeline corridor was conducted during May through October, 1991. Additional botanical surveys were conducted through June, 1992. Wildlife surveys covered not only the pipeline ROW but also much of the habitat in the vicinity, because occurrences of sensitive species off site, but nearby, would be relevant to the evaluation of impacts upon habitat. Bird surveys were carried out in May and June, 1992. Preliminary surveys for the desert tortoise and Mohave ground squirrel and suitable habitat for these species were conducted in May and August, 1992. Surveys for fish, amphibians, and other reptiles between Cajon Summit and Fontana were carried out in May, June, and July, 1992. Finally, information was gathered from the Bureau of Land Management, the U.S. Forest Service, and the California Department of Fish and Game. In addition, the California Natural Diversity Data Base (NDDB) was queried to determine what sensitive plant and animal species are, or might be likely to be, found along the proposed route.

Freshwater Aquatic Habitats

There are 18 water systems crossed or paralleled by the proposed Cajon Pipeline between 12-Gauge Lake and Carson. These water systems are presented in Table 4.2.1-1 of the Onshore Water Resources section. Of these water systems, only the Cajon Wash, Rio Hondo, and the Whittier Narrows contain riparian vegetation in the vicinity of the proposed pipeline. A description of this community appears below under Terrestrial Vegetation.

Fish diversity in southern California rivers and streams is low due to the lack of suitable habitat (primarily lack of permanent water), highly variable rates of discharge, elevated turbidities, temperature fluctuations, dredging, and channelization for flood control projects. Legg Lake at the Whittier Narrows Recreation area has been stocked with channel catfish (*Ictalurus punctatus*), bass (*Micropterus* spp.), and trout (*Salmo* spp.) by the California Department of Fish and Game. In nearby New Lakes wetlands, largemouth bass (*Micropterus salmoides*), black bullhead (*Ictalurus melas*), brown bull head (*Ictalurus nebulosus*), green sunfish (*Lepomis cyanllus*), redear sunfish (*Lepomis microlophus*), bluegill (*Lepomis macrochirus*), mosquitofish (*Gambusia affinis*), threadfin shad (*Dorosoma petenense*), and fathead minnow (*Pimephales promelas*) have been introduced. Several species of trout (*Oncorhyncus* spp. and *Salmo* spp.) were introduced into Cajon Wash decades ago, but none has persisted to the present.

The speckled dace (*Rhinichthys osculus*), a federal candidate (category 2) and a California Species of Special Concern, inhabits the Cajon Wash; indeed, it was the only fish found within the flowing channels of Cajon Creek during the field surveys (see the Technical Appendix I).

Terrestrial Habitats

Vegetation

Terminology used in this section for the vegetation communities generally follows the NDDB Natural Community Descriptions (Holland, 1986). Although reliance upon this system confers a semblance of uniformity, it has inherent limitations in situations where mosaics of plant communities conforming to the definitions occur, or where disturbance due to development, OHV activity, grazing, or other human activities has altered the original character of the vegetation. Also, some distinctive and important habitats or elements that are not listed or highlighted by the NDDB system may remain undocumented.

The major vegetation communities (and, where applicable, November 1990 community code numbers) encountered along the pipeline route include Desert Saltbush Scrub (36110), Mohave Creosote Bush Scrub (34100), Joshua Tree Woodland (73000), Semi-Desert Chaparral (37400), Southern Mixed Chaparral (37120), Riversidean Sage Scrub (32700), and Southern Riparian Scrub (63300). Alluvial wash channels occur within several of the community types. In addition to plant communities listed, Southern Cottonwood-Willow Riparian Forest, Southern Willow Scrub and Mulefat Scrub are present in Cajon Wash.

Desert Saltbush Scrub

This plant community is widely scattered throughout the Mojave Desert. It typically occurs in areas with fine-textured, poorly drained soils with high alkalinity or salinity, including low-lying areas surrounding playas. Stands of this community are dominated by saltbush (*Atriplex* spp.) Other species characteristic to saltbush scrub include *Aster intricatus, Grayia spinosa, Kochia californica, and Lycium* spp.[1]

Desert Saltbush Scrub occupies the Cajon Terminal site (M.P. 0). The site is dominated by shadscale (*Atriplex confertifolia*) and saltbush (*Atriplex lentiformis*). A peculiar biological micro-community, forming a fragile crust on the soil surface and supporting Mojave spineflower (a CNPS "watch list" species), covers much of the site and is common along the first mile of the pipeline route and in the immediate vicinity. Desert Saltbush Scrub flats are also found as islands within, or forming a mosaic with, Mojave Creosote Bush Scrub along many more miles of the pipeline ROW.[2]

Mojave Creosote Scrub

Mojave Creosote Bush Scrub dominates many thousands of square miles of the Mojave Desert, occupying sites with well-drained secondary soils with low water availability. Dominant plant species in this community are creosote bush (*Larrea tridentata*) and burro bush (*Ambrosia dumosa*); other common woody species include *Cassia armata* and *Ephredra nevadensis*. This community intergrades with Joshua Tree Woodland at higher elevations.[3] Mojave Creosote Bush Scrub is the dominant community between M.P. 1 and approximately M.P. 25 and can also be found between M.P. 35 and 40.[4]

Joshua Tree Woodland

This community is typically found on sandy, loamy, or well-drained gentle alluvial slopes at elevations between 2,500 and 5,000 feet. The Joshua tree (*Yucca brevifolia*) is usually the only arborescent species. However, in most areas, the shrub understory species actually make up a greater percentage of the cover. Characteristic shrubby species include creosote bush, burro bush, and boxthorn (*Lycium andersonii*).[5] Although the Joshua tree is an abundant species in undisturbed examples of this community type, because it is generally the only arborescent plant and, directly or indirectly, provides many critical resources for many species of desert wildlife, including some sensitive and/or listed species, it is extremely important in this ecosystem. Also, it is very slow-growing and vulnerable to destruction in areas of human activity. Accordingly, increasing attention is being paid to preservation of individual Joshua trees when projects are planned and implemented in this community type.

Along the pipeline route, Joshua Tree Woodland can be found west of Freemont Wash, to and around the City of Adelanto, along Baldy Mesa Road, and along the ridge between 12-Gauge Lake and U.S. Route 395 (U.S. 395). Joshua Tree Woodland is found primarily between M.P. 25 and 42.[6] Although the plant community in this area is referred to in this document as Joshua Tree Woodland, the trees are relatively sparsely distributed, so that the vegetation could also be interpreted as Mojave Creosote Bush Scrub with a component of Joshua trees. However, for the purposes of analysis of potential impacts, especially on wildlife species, it was deemed more valuable to emphasize the Joshua tree element in this section, by referring to the plant community as Joshua Tree Woodland.

Semi-Desert Chaparral

This community is distributed along the interior slopes of the Transverse and Peninsular Ranges at elevations between 2,000 and 5,000 feet, on rocky soils within rapid runoff. Along the pipeline route, characteristic species of this community include California buckwheat (*Eriogonum fasciculatum*), chamise

(*Adenostoma fasciculatum*), scrub oak (*Quercus dumosa*), ceanothus (*Ceonothus greggii*), silk tassel (*Garrya flavescens*), manzanita (*Arctostaphylos glauca*), and yerba santa (*Eriodictyon trichocalyx*). Scattered junipers (*Juniperus californicus*) occur at the highest elevations. Along the inland (north) side of the Cajon Pass, some species more typical of Northern Mixed Chaparral occur, including holly-leaved cherry (*Prunus ilicifolia*) and mountain mahogany (*Cercocarpus betuloides*).

Along the pipeline route, the northern and southern slopes of the San Gabriel Mountains (approximately M.P. 42 to 51) are vegetated by Semi-Desert Chaparral.[7] On the south side of the Cajon Pass, some areas of this plant community have been type-converted to grasslands by grazing and for firebreaks. In most of the grasslands of this portion of the pipeline route, the typical plants are an introduced perennial beardgrass (*Andopogon trichophorum*), filarees (*Erodium* spp.), Mediterranean grass (*Schismus* sp.), and combseed (*Pectocarya* sp.)[8] Some areas of native perennial grassland, dominated by *Stipa speciosa*, also occur.

Southern Mixed Chaparral

This plant community also occurs on well-drained rocky soils, below 3,000 feet. Dominant plant species may include California buckwheat (*Eriogonum fasciculatum*), chamise (*Adenostoma fasciculatum*), scrub oak (*Quercus dumosa*), ceanothus (*Ceonothus* spp.), manzanitas (*Arctostaphylos* spp.), sumac (*Rhus ovata*), buckthorn (*Rhamnus crocea*), and yucca (*Yucca whipplei*). A variety of herbaceous species also occur. Along the pipeline route, patches of Southern Mixed Chaparral occur on the slopes south of Cajon Pass. The pipeline route does not pass through any well developed patches of this community.

Riversidean Sage Scrub

The NDDB nomenclature and descriptions of sage scrub communities recognize several finely distinguished vegetation types that intergrade with one another. The vegetation of the sage scrub that occurs along the pipeline route seems to conform most closely to Riversidean Sage Scrub, which is the driest inland sage scrub community in the project vicinity. This community occurs on steep slopes with well-drained soils, or clays with high water retention. Dominant plant species are California sagebrush (*Artemisia californica*), California buckwheat (*Eriogonum fasciculatum*), and non-native brome grasses (usually *Bromus rubens*). Riversidean Sage Scrub occurs, mixed with other plant communities, on the hillsides south of Cajon Pass. The pipeline does not pass through any well developed patches of this community.

Southern Riparian Scrub

This community is typically found along the stream banks of southern California rivers and tributaries. The dominant plant species may be either willows (*Salix* spp.) or mule fat (*Baccharis salicifolius*). Other species that may occur include cottonwood (*Populus fremontii*), arrowweed (*Pluchea sericea*), and nettle (*Urtica holosericea*). Riparian habitat is also found in the Whittier Narrows and San Jose Creek; in these locations, the vegetation is dominated by the invasive non-native giant reed (*Arundo donax*).

The pipeline ROW, but not the pipeline itself, would intersect Southern Riparian Scrub only in the Cajon Wash, in two small spots; this community and other riparian associations such as Southern Cottonwood-Willow Riparian Forest and Mulefat Scrub also occur nearby, but off site, in Cajon Wash and some other locations.

Wildlife

Chaparral and Sage Scrub

Reptiles common in these habitats include the western fence lizard (*Sceloporus occidentalis*), coast horned lizard (*Phrynosoma coronatum*), southern alligator lizard (*Gerrhonotus multicarinatus*), western whiptail (*Cnemidophorus tigris*), and striped racer (*Masticophis lateralis*). The sagebrush lizard (*S. graciosus*) also occurs here but is relatively uncommon. Where water is at least seasonally available, some amphibians also occur in chaparral and sage scrub. The most common species are the western toad (*Bufo boreas*) and the Pacific slender salamander (*Batrachoseps pacificus*). Ensatina (*Ensatina eschscholtzi*) occurs in dense, closed-canopy chaparral, but would not be expected to occur in the open shrub/scrub communities of the project site.

Approximately 300 species of birds are known to occur in southern California. Common species within chaparral and sage scrub include scrub jay (*Aphelocoma coerulescens*), California towhee (*Pipilo crissalis*), Bewick's wren (*Thryomanes bewickii*), orange-crowned warbler (*Vermivora celata*), bushtit (*Psaltriparus mininus*), and Lazuli bunting (*Passerina amoena*). Species more restricted to chaparral include California quail (*Callipepla californica*), wrentit (*Chamaea fasciata*), and Anna's hummingbird (*Calypte anna*). The California gnatcatcher is discussed below.

Common small mammals in chaparral include western harvest mouse (*Reithrodontomys megalotis*), California pocket mouse (*Perognathus californicus*), deer mouse (*Peromyscus maniculatus*), brush mouse (*Peromyscus boylii*), dusky-footed woodrat (*Neotoma fuscipes*), California vole (*Microtus californicus*), California ground squirrel (*Spermophilus beccheyi*), and Botta's pocket gopher (*Thomomys bottae*). Other mammals include the desert cottontail (*Sylvilagus audubonii*), brush rabbit (*Sylvilagus bachmani*), raccoon (*Procyon lotor*) and mule deer (*Odocoileus hemionus*). Two species of skunk, the western spotted skunk (*Spilogale gracilis*) and striped skunk (*Mephitis*) also are common. The coyote (*Canis latrans*) is a predator which has adapted to living in close proximity to urban areas. As a result, the coyote continues to thrive. Others predators include the gray fox (*Urocyon cineroargentatus*), bobcat (*Felis rufus*), badger (*Taxidea taxus*) and ring-tailed cat (*Bassariscus astutus*). The latter rarely ventures far from some sort of riparian habitat or water source.

Creosote Bush and Saltbush Scrub

The amphibian found most often in desert scrub habitat is the Western spadefoot toad (*Scaphiophus hammondi*); nevertheless, it is uncommon, occurring only in higher quality washes and seasonal pond habitats. Reptiles of these communities include the desert tortoise (*Gopherus agassizi*), desert iguana (*Dipsosaurus dorsalis*), chuckwalla (*Sauromalus obesus*), desert spiny lizard (*Sceleroporus magister*), western whiptail (*Cnemidophorus tigris*), gopher snake (*Pituophos melanoleucus*), and sidewinder (*Crotalus cerastes*).

Birds common in the Mojave Desert include Sage Sparrow (*Amphispiza belli*) and Horned Lark (*Eremophila alpeotris*). Less common are Le Conte's thrasher (*Toxostoma lecontei*), loggerhead shrike (*Lanius ludovicianus*), roadrunner (*Geococcyx californianus*), red-tailed hawk (*Buteo jamaicensis*), and golden eagle (*Aquila chrysaetos*). Mammals include the coyote, Merriam's kangaroo rat (*Dipodomys merriami*), little pocket mouse (*Perognathus longimembris*), southern grasshopper mouse (*Onychomys torridus*), Mohave ground squirrel (*Spermophilus mohavensis*), black-tailed jack rabbit (*Lepus californicus*), and bobcat.

Riparian Scrub

Riparian habitats provide food, water, migration and dispersal corridors, and visual and thermal cover for a wide range of wildlife species. A large number of birds utilize this habitat, including the common yellowthroat (*Geothlypis trichas*), least Bell's vireo (*Vireo bellii pusillus*), yellow-breasted chat (*Icteria virens*) and several sparrows.

Amphibians expected to exist along the stream channel and beneath the leaf litter include, the western toad (*Bufo boreas*), Pacific tree frog (*Hyla regilla*), California tree frog (*Hyla cadaverina*), and the Pacific slender salamander (*Batrachoseps pacificus*). Many of the reptiles associated with the upland habitats will also utilize the riparian woodlands.

Sensitive Species Potentially Occurring Along the Pipeline Route

Several sources were used to establish a list of sensitive species that could potentially occur along the proposed pipeline ROW. The primary sources were the California Natural Diversity Data Base (NDDB) printouts for the entire pipeline route, and a list of wildlife and plant species occurring in the Cajon Pipeline area and regarded as sensitive by the U.S. Forest Service. As detailed in the introduction to this section, field surveys for these species were conducted in 1991 and 1992 for the northern half of the pipeline route. Sources of information used for the botanical survey included the US Fish and Wildlife Service, Bureau of Land Management, U.S. Forest Service, and California Department of Fish and Game, and the Herbarium at the University of California, Riverside. The Technical Appendix I contains information on sensitive species potentially occurring within the jurisdiction of the U.S. Forest Service.

A review of the data sources indicated that 82 species potentially occurring along the pipeline route have been identified as sensitive by either the State of California, U.S Fish and Wildlife Service, or California Native Plant Society (CNPS). The list includes species which have been identified as qualifying for listing, or are species with sufficiently restricted distribution or numbers that they are vulnerable to habitat removal. An additional seven species do not have official listing status and are not on the CNPS lists, but are tracked by the NDDB as being important ecologically, or likely to be listed in the future if present trends continue. The list of species, their statuses, and ecological notes for each species is presented in Technical Appendix I.

Ecological and occurrence information for the 89 species was reviewed to determine which species have been either been sighted within the vicinity of the pipeline ROW, or have the greatest potential to be present based on historical information. Sixty-six species were determined to have a moderate to high potential to occur on the site. These are listed in Table 4.3.1-1.

A brief discussion of the sensitive species potentially occurring along the pipeline route follows. Sensitive species found along the ROW during the field surveys are listed in the final paragraph.

Sensitive Plants of Desert Habitats

Nine sensitive plants of desert habitats could occur in the vicinity of the project site. These include the state-listed endangered Mojave tarplant (*Hemizonia mojavensis*); four species that are candidates for federal listing, the short-jointed beaver tail (*Opuntia basilaris* var. *brachyclada*), Barstow woolly sunflower (*Eriophyllum mohavense*), Panamint dudleya (*Dudleya saxosa saxosa*) and Mojave monkeyflower (*Mimulus mohavensis*); and four CNPS List 4 "watch" species, the Mojave spineflower (*Chorizanthe spinosa*), Lemmon's syntrichopappus (*Syntrichopappus lemmonii*), Booth's evening primrose (*Camissonia boothii boothii*), and Mojave indian-paintbrush (*Castilleja plagiotoma*) . Two CNPS List 4 "watch" species, the Mojave spineflower and Lemmon's syntrichopappus, were found within the project right-of-way during spring 1990 botanical surveys.[9]

Mojave Tarplant

Mojave tarplant inhabits Joshua Tree Woodland, chaparral, and riparian scrub habitat between the 3,000 foot and 4,000 foot elevations and flowers between from July to September. It was last observed along the Mojave River at Deep Creek in 1933. Habitat for this species does not occur in the project right-of-way.

Short-Joint Beaver Tail

The short-jointed beaver tail (Federal C2 species) is a succulent perennial cactus and blooms between May and June. It is found in chaparral, riparian woodland, and Joshua Tree Woodland at elevations between 4,000 and 7,500 feet. It was not observed during botanical surveys of the project right-of-way, but it is known to occur on the northern slopes of the San Bernardino and San Gabriel Mountains in the vicinity of the Guard Station at Cajon Junction and upper Baldy Mesa. It has a moderate to high potential to occur near the proposed right-of-way, especially near Cajon Pass.

TABLE 4.3.1-1
Sensitive Plant and Animal Species with the Greatest Potential To Occur Along the Cajon Pipeline Route

Common Name[1]	Scientific Name	Status[2] (State/Federal/ CNPS)
PLANTS		
Barstow woolly star	*Eriophyllum mohavense*	-/C2/1B
Short-joint beavertail[3]	*Opuntia basilaris brachyclada*	-/C2/1B
Many-stemmed dudleya	*Dudleya multicaulis*	-/C2/1B
Parish's gooseberry	*Ribes divaricatum parishii*	-/C2/1B
Slender-horned spineflower	*Dodecahema leptoceras*	E/E/1B
Santa Ana woolly star	*Eriastrum densiflora sanctorum*	E/E/1B
Mojave monkeyflower	*Mimulus mohavensis*	-/C2/1B
Mojave tarplant	*Hemizonia mojavensis*	E/C1/1A
Panamint dudleya	*Dudleya saxosa*	-/C2/4
Booth's evening primrose	*Camissonia boothii*	-/-/4
Mojave Indian paintbrush	*Castilleja plagiotoma*	-/-4
Mojave spineflower	*Chorizanthe spinosa*	-/-/4
Lemmon's syntrichopappus	*Syntrichopappus lemonii*	-/-/4
AMPHIBIANS AND REPTILES		
Western spadefoot toad	*Scaphiopus hammondi*	CSC/-/-
Arroyo southwestern toad	*Bufo microscaphus californicus*	CSC/C2/-
Western pond turtle	*Clemmys marmotata pallida*	CSC/C2/-
Desert tortoise	*Gopherus agassizi*	T/T/-
Silvery legless lizard	*Aniella pulchra pulchra*	CSC/-/-
Coastal Western Whiptail	*Cnemidophorus tigris multiscutatus*	-/C2/-
Orange-throated Whiptail	*Cnemidophorus hyperythrus*	CSC/C2/-
San Diego banded gecko	*Coleonyx varigatus*	-/-/-
San Diego horned lizard	*Phrynosoma coronatum blainvillei*	CSC/C2/-
California horned lizard	*Phrynosoma coronatum*	CSC/-/-
Southern sagebrush lizard	*Sceloporus graciosus vandenburgianus*	-/C2/-
San Bernardino ringneck snake	*Diadophis punctatus*	-/C2/-
San Bernardino mountain kingsnake	*Lampropeltus zonata parviruba*	-/-/-

TABLE 4.3.1-1
Sensitive Plant and Animal Species with the Greatest Potential To Occur Along the Cajon Pipeline Route

Common Name[1]	Scientific Name	Status[2] (State/Federal/ CNPS)
Coastal rosy boa	*Lichanura trivirgata*	-/C2/-
Coast patch-nosed snake	*Salvadora hexalepis*	-/C2/-
Two-striped garter snake	*Thamnophis hammondi*	-/C2/-
BIRDS		
Prairie falcon[3]	*Falco mexicanus*	CSC/-/-
Western yellow billed cuckoo	*Coccyzus americanus occidentalis*	E/C3B/-
Long eared owl[3]	*Asio otus*	CSC/-/-
Burrowing owl	*Athene cunicularia*	CSC/-/-
California gnatcatcher[3]	*Polioptila californica*	CSC/C2/-
Mountain quail	*Oreortyx pictus*	-/C2/-
Le Conte's thrasher	*Toxostoma lecontei*	CSC/-/-
Loggerhead shrike	*Lanius ludovicianus*	-/C2/-
Least Bell's vireo[3]	*Vireo bellii pusillus*	E/E/-
Yellow warbler[3]	*Dedroica petechia brewsteri*	CSC/-/-
Black-shouldered kite	*Elanus caerulus*	CSC/-/-
Cooper's hawk[3]	*Accipter cooperi*	CSC/-/-
Sharp-shinned hawk[3]	*Accipter striatus*	CSC/-/-
Golden eagle[3]	*Aquila chrysaetos*	CSC/-/-
Peregrine falcon[3]	*Falco peregrinatus anatum*	E/E/-
Coastal cactus wren	*Campylorhynchus brunneicapillus couesi*	-/C2/-
Southern california rufuous-crowned sparrow	*Aimpohila ruficeps canescens*	-/C2/-
Bell's sage sparrow	*Amphispiza belli belli*	CSC/C2/-
Willow flycatcher[3]	*Empidonax traillii*	E/-/-
Bank swallow	*Riparia riparia*	T/-/-
Lewis[1] woodpecker	*Asymdesmus lewis*	CSC/-/-
Purple martin	*Progne subris*	CSC/-/-
Yellow breasted chat	*Icteria virens*	CSC/-/-
Hepatic tanager	*Prianga rubra*	CSC/-/-

TABLE 4.3.1-1
Sensitive Plant and Animal Species with the Greatest Potential To Occur Along the Cajon Pipeline Route

Common Name[1]	Scientific Name	Status[2] (State/Federal/ CNPS)
Turkey vulture	*Cathartes aura*	-/-/-
Flammulated owl	*Otuds flammeolus*	-/-/-
Tree swallow	*Iridoprocne bicolor*	-/-/-
Swainson's thrush	*Catharus ustulata*	-/-/-
MAMMALS		
Mohave ground squirrel	*Spermophilus mohavensis*	T/C2/-
Los Angeles pocket mouse[3]	*Perognathus longimembris brevinasus*	CSC/C2/-
Merriam's kangaroo rat[3]	*Dipodomys merriami parvus*	-/C2/-
American badger[3]	*Taxidea taxus*	CSC/-/-
Townsend's Western Big-eared bat	*Plecotus townsendii townsendii*	CSC/C2/-
Spotted bat	*Euderma maculatum*	-/C2/-
Pallid bat	*Antrozous pallidus*	CSC/-/-
Western mastiff bat	*Eumops perotis*	C2/-/-
California mastiff bat	*Eumops perotis californicaus*	CSC/C2/-
California leaf-nosed bat	*Macrotis californicus*	CSC/C2/-
Mountain lion	*Felis concolor*	CSC/-/-
FISH		
Santa Ana speckled dace[3]	*Rhinichthys osculus*	CSC/C2/-

[1] Sources:
California Natural Diversity Data Base.
Rindlaub, Katherine, *Cajon Pipeline Botanical Survey 12-Gauge Lake Tank Farm Site to Cajon Wash*, 1991.
United States Department of Agriculture, Forest Service, San Bernardino National Forest, 1991.

[2] State/Federal/CNPS:

State:
California Endangered Species Act (1984), Native Plant Protection Act (1977), and the California Environmental Quality Act.
R = Rare. Plants that although not currently Threatened are in such small numbers or restricted habitats that they may become Threatened or Endangered if present conditions continue.
T = Threatened. Plants or animals likely to become Endangered in the foreseeable future in the absence of protection action(s).
E = Endangered. Seriously in danger of becoming extinct.
CCE = California Candidate for listing as Endangered.
CCT = California Candidate for listing as Threatened.
CSC = California Department of Fish and Game Species of Special Concern.

Table 4.3.1-1 (Continued)

CFP = A California Department of Fish and Game "fully protected" species, as described in Section 4700 of Chapter 8, Section 5050 of Chapter 2, Division 6, Chapter 1, Section 5515.

Federal:
Federal Endangered Species Act of 1973, as amended.
E = Taxa formally listed as Endangered.
T = Taxa formally listed as Threatened
C1 = Candidate taxa for which there is enough information to support the biological appropriateness of proposing to list as Threatened or Endangered.
C2 = Candidate taxa for which there is biological information that indicates that proposing to list the taxa as Threatened or Endangered is possibly appropriate, but for which substantial data on biological vulnerability and threat(s) are not currently known or on file to support the immediate listing.
C3 = Taxa that are no longer under consideration for listing. There are three subcategories, depending on reason(s) for removal from consideration:
  3A = Taxa believed to be extinct.
  3B = Taxa with taxonomic problems that do not meet the Endangered Species Act definition of a "species."
  3C = Taxa that are too common or widespread and/or those not subject to any identifiable threat(s).
PE = Proposed Endangered.
FSS = Federal (BLM and USFS) Sensitive Species.

1 = Category 1 Candidate for Federal listing. (Taxa for which the U.S. Fish and Wildlife Service has sufficient biological information to support a proposal to list as Endangered or Threatened.)
2 = Category 2 Candidate for Federal list. (Taxa which existing information indicates may warrant listing, but for which substantial biological information to support a proposed rule is lacking.)
W = Watch list. Location information for these taxa is not computerized. The NDDB is currently collecting distribution information but maintains manual files only.

Other:
Section 15380 of the California Environmental Quality Act [CEQA (September, 1983)] has a discussion regarding non-listed (State) taxa. This section states that a plant (or animal) must be treated as Rare or Endangered even if it is not officially listed as such. If a person (or organization) provides information showing that a taxa meets the State's definitions and criteria, then the taxa should be treated as such in an EIR.

The California Native Plant Society (CNPS) Inventory of Rare and Endangered Vascular Plants (1985).
List 1 = Plants of Highest Priority.
List 1A = Plants presumed Extinct in California.
List 1B = Plants Rare or Endangered in California and elsewhere.
List 2 = Plants Rare or Endangered in California, more common elsewhere.
List 3 = Plants for which more information is needed.
List 4 = Plants of limited distribution (a watch list).

Priority:
1. Face immediate extirpation in California.
2. Definitely in decline.
3. Vulnerable to extirpation due to small natural range.

[3] Species recently recorded in the vicinity of the project area according to the U.S. Forest Service.

Mojave Monkey Flower

Mojave monkeyflower (Federal C2 species) is found within Creosote Bush Scrub and Joshua Tree Woodland between the elevations of 2,000 and 3,000 feet. It is a spring-blooming annual with purple flowers. It is endemic to San Bernardino County, extremely rare (20 reported occurrences), and threatened by off-road vehicles and development. Populations in the Barstow area have already been damaged or extirpated. It is also found in the Victorville and Ord Mountains Region, generally east of the pipeline right-of-way.

Mojave Spineflower

Mojave spineflower (CNPS List 4 species) occupies the western Mojave Desert east to Rabbit Springs on dry gravelly, sandy soils vegetated with Creosote Bush Scrub and Joshua Tree Woodland. It is also often found in transition zones between saltbrush scrub and creosote bush scrub habitats. This species is reported to tolerate and/or proliferate under conditions of mild to moderate amounts of surface disturbance.[10] Mojave spineflower was located on the proposed 12-Gauge Lake Tank Farm site and in scattered locations at lower elevations along the pipeline route that crosses the 12-Gauge Lake quadrangle during botanical surveys conducted in spring 1991.[11]

Lemmon's Syntrichopappus

Lemmon's syntrichopappus is an annual herb, found in sandy soils of chaparral and Joshua Tree Woodlands in the Mojave Desert and on the slopes of the San Bernardino and San Gabriel Mountains at elevations between 1,000 and 7,000 feet. It flowers in April and May. It was found on Segment 4 between Adelanto across to Baldy Mesa at elevations between 2,950 and 3,900 feet. Individuals were found within a relatively undisturbed wash, and the species is likely to occur in other relatively undisturbed washes along this segment that were not surveyed on foot.

Panamint Dudleya

Panamint dudleya is a succulent perenial herb found in Creosote Bush Scrub and Pinyon Juniper Woodland. It inhabits dry, stony slopes between 3,000 and 7,000 feet. This dudleya has yellow flowers that bloom between May and June. It has moderate potential to occur along the proposed ROW, near and north of Cajon Pass.

Booth's Evening Primrose

This is an annual herb found in Joshua Tree Woodland and Pinyon Juniper Woodland. The flowering time for this species is uncertain. This species has the potential to occur in Joshua Tree Woodland along the proposed ROW.

Mojave Indian Paintbrush

This perennial is found in Joshua Tree Woodland and sagebrush scrub on dry flats and ridges of the northern base of the San Gabriel and San Bernardino Mountains between 2,500 and 7,500 feet. Flowering time for this species is uncertain. This species has the potential to occur along the ROW near the base of the San Gabriel Mountains.

Barstow Woolly Star

The Barstow wooly star is an herbaceous annual found within sandy or rocky places between 2,000 and 3,000 feet in Creosote Bush Scrub. It is thought to occur only within 30 miles of Barstow in the Mojave Desert and has been reported along both sides of the highway near 12-Gauge Lake.[12] It flowers between April and May.

Desert-Associated Sensitive Wildlife Species

Sensitive desert wildlife species most likely to occur within Creosote Bush Scrub, Saltbush Scrub, or Joshua Tree Woodland include the desert tortoise (*Gopherus agassizi*), prairie falcon (*Falco mexicanus*), golden eagle (*Aquila chrysaetos*), Le Conte's thrasher (*Toxostoma leconteii*), and the Mohave ground squirrel (*Spermophilus mohavensis*).

Desert Tortoise

Desert tortoises are fully protected under both state and federal law as threatened reptile because of concern for their survival and a need to protect their habitat. In the Mojave Desert, the decline in population of desert tortoise has been attributed to loss of habitat, off-road vehicle use, livestock grazing, illegal collection for the pet trade, predation from ravens that are attracted by landfills, and introduced disease.[13]

Desert tortoises occur in Creosote Bush Scrub and Joshua Tree Woodland in the Mojave Desert of California and in other desert habitats in Nevada, Utah, Arizona, and Mexico. They generally hibernate during the cooler months of the year (late fall, winter, and early spring). Desert tortoise activity increases when their forage food (annual grasses, herbs and some shrubs) become available between March and May. During the remainder of the late spring, summer, and early fall, they are less active.

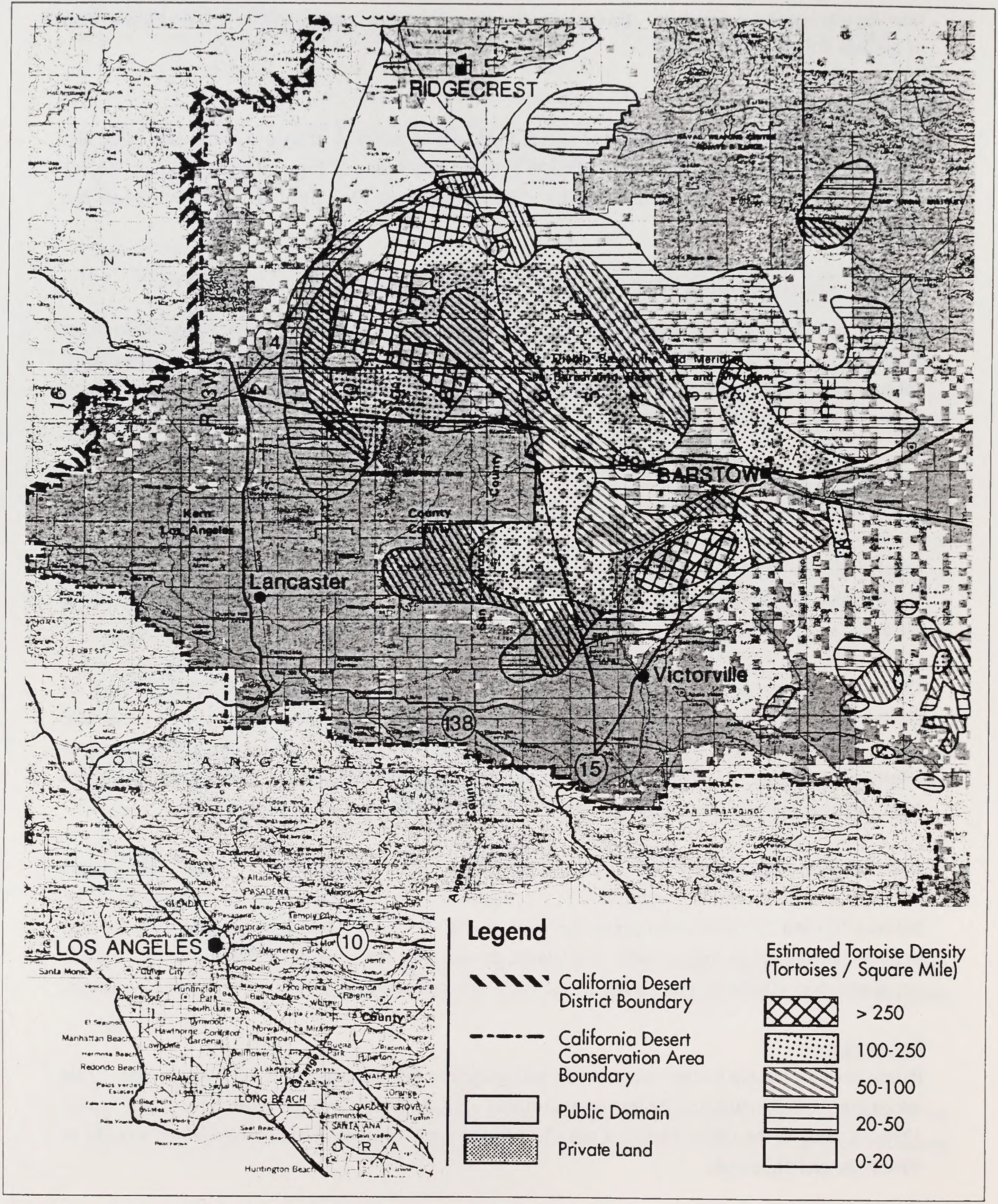
Desert tortoise densities vary from 20 to 100 individuals per square mile near 12-Gauge Lake (Figure 4.3.1-1). Along the pipeline route near U.S. 395, south almost to Adelanto, densities are estimated to be between 100 and 250 individuals per square mile. In the vicinity of Adelanto, estimated densities drop to 50 to 100 per square mile. South of Adelanto, densities are estimated to be less than 20 individuals per square mile. Desert tortoises inhabitat the ROW and immediate vicinity in the northernmost segment.

Prairie Falcon

Prairie falcons inhabit a variety of habitats including open mountains, prairies, and dry, open terrain. This falcon breeds along cliffs and forages great distances. Prairie falcons were released in the Cajon Pass in 1990. It nests in the Cajon Pass area near the pipeline route and has been observed in the vicinity of Victorville and Helendale.

Desert Tortoise Estimated Population Density

Figure 4.3.1-1



Source: California Desert Tortoise Workgroup, July 1988

No Scale

90439

Le Conte's Thrasher

This bird species is found in both saltbrush and creosote scrub. It is known to utilize cholla cactus for breeding, and has been recorded at several locations northwest of Adelanto near U.S. 395.

Golden Eagle

This large raptor inhabits rolling foothill terrain of the Mojave Desert and the coastal mountain ranges. It nests along cliff walls and in large trees. Although the golden eagle was not included in the CNDDB report for the region, it has been observed north of Helendale in 1980 as well as in forest habitats along the pipeline ROW. It may potentially forage in the study area. Golden eagles are protected under the Eagle Protection Act.

Mohave Ground Squirrel

This state-listed threatened species is found in Creosote Bush Scrub, Joshua Tree Woodland, and Salt Brush Scrub habitats. The Mohave ground squirrel is endemic to the Mojave Desert where it ranges from Harper Dry Lake and Searles Lake to the foothills of the southern Sierra Nevada. It is a solitary, secretive species which distinctive spots or stripes. It may occur with the antelope ground squirrel which has distinctive white stripes. Many seeds and vegetative parts of desert plants are used for food. It hibernates through winter, emerging between March and May. It may occur along the proposed ROW within the Mojave Desert.

Riparian Associated Sensitive Plants

Suitable habitat for one sensitive plant, Parish's gooseberry (*Ribes divaricatum parishii*), occurs within riparian habitats along the ROW.

Parish's Gooseberry

This plant is found within riparian woodlands (willow thickets) and coastal sage brush. This widely branched deciduous shrub has red flowers which bloom in March and April. It has been recorded in the vicinity of the Whittier Narrows Nature Center. It could also potentially occur within the Cajon Wash.

Riparian Associated Wildlife Species

Several wildlife species may potentially occur within riparian habitats along the pipeline route, including the western pond turtle (*Clemmys marmorata*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), long-eared owl (*Asio otus*), black shouldered kite (*Elanus caerulus*), Cooper's hawk (*Accipter cooperi*), willow flycatcher (*Empidonax traillii*), bank swallow (*Riparia riparia*), least Bell's vireo (*Vireo bellii pusillus*), yellow warbler (*Dendroica petechia brewsteri*) and speckled dace (*Rhinichthys osculus*). Species that are now generally believed to be extinct in the project vicinity are not discussed; these include coast range newt, western spadefoot toad, arroyo toad, southern red-legged frog, and foothill yellow-legged frog (see Technical Appendix I).

Western Pond Turtle

The western pond turtle is found in permanent or nearly permanent bodies of water in many habitat types. It requires basking sites such as vegetation mats and mud banks. It has been observed at Lost Lake, in the vicinity of Whittier Narrows and near the City of Victorville.

Western Yellow-Billed Cuckoo

This endangered bird breeds in extensive riparian vegetation along larger river systems. It has been historically observed along the San Gabriel River near Artesia. It could potentially utilize riparian habitat within Whittier Narrows and Cajon Wash.

Long Eared Owl

This owl is primarily found in riparian habitats with mature willows and cottonwoods. It forages on adjacent open land and utilizes old crow and hawk nests for nesting. It was observed six miles southwest of the City of Hesperia and in Crowder Canyon and is a potential resident of riparian habitats along the ROW.

Black-Shouldered Kite

This raptor can be found along rolling hills/valley margins with scattered oaks and river bottoms or marshes. The black-shouldered kite uses open grasslands and meadows for foraging. It may potentially inhabit or forage in the Cajon Wash, Lytle Creek, and Whittier Narrows areas.

Cooper's Hawk

Cooper's hawk nests and forages within riparian woodlands. It nests in the Cajon Pass area and has been observed in Cajon Wash, Crowder Canyon, and Cleghorn Canyon. It is also a potential resident of riparian habitats in the Whittier Narrows area.

Sharp-shinned Hawk

The sharp-shinned hawk is a very close relative of Cooper's hawk which has a geographic range that lies somewhat further north. It is a summer resident of deciduous (riparian) or coniferous forests. During winter months, it occupies a variety of habitats (excluding open grassland and deserts). It typically nests in small stands of conifers near water. The sharp-shinned hawk is an extremely rare breeder in southern California but is a fairly common winter resident. It has been recorded in Cleghorn Canyon.

Willow Flycatcher

This species, which is extremely difficult to distinguish from other members of its genus except by song, requires dense, extensive willow forests for nesting and roosting. It could potentially inhabit riparian habitats adjacent to the ROW (Cajon Wash and Whittier Narrows). It has been recorded as occurring within Forest Service land in the vicinity of the route.

Bank Swallow

This swallow is a colonial nester in riparian and other habitats west of the desert. It requires banks and cliffs with fine-textured soils for nesting holes. This species has been historically observed near Whittier.

Least Bell's Vireo

The least Bell's vireo is found in dense, young willow-cottonwood woodlands. It is known from limited populations along dense riparian habitats in southern California. This subspecies has suffered a decline in numbers due to the state wide reduction in riparian habitat, its preferred habitat. Nest parasitism by brown-headed cowbirds (*Molothrus alter*) has further reduced the population of the least Bell's vireo. In 1988, the population was estimated at approximately 400 breeding pairs in the United States.[14] Least Bell's vireo has previously been recorded as occurring in Cajon Wash, and a singing individual (presumably nesting, or a prospective nester) was heard at the confluence of Lone Pine Creek and Cajon Creek in 1991. No least Bell's vireos were observed or heard during bird surveys carried out in 1992 along and in the vicinity of the proposed pipeline ROW.

Yellow Warbler

The yellow warbler is a summer inhabitant of riparian willows, cottonwoods, aspens, sycamores, and alders. It is also nest-parasitized by cowbirds. The yellow warbler forages up to heights of 40 feet and nests from middle heights to as low as 3 feet. It winters from Mexico to Peru. It has been recorded as occurring in Cajon Wash.

Santa Ana Speckled Dace

The Santa Ana speckled dace inhabits cold to warm creeks, rivers, and lakes over gravel or rock. This subspecies is known to inhabit the Cajon Wash.

Chaparral/Coastal Sage Scrub-Associated Sensitive Plant Species

Three sensitive plant species that occur within chaparral/coastal sage brush may be found in the vicinity of the pipeline ROW. These include the slender-horned spineflower (*Dodecahema leptoceras*), Santa Ana woolly star (*Eriastrum densiflora sanctorum*), and many-stemmed dudleya (*Dudleya multicaulis*).

Slender-Horned Spineflower

Slender-horned spineflower occurs on alluvial fans and in coastal sage brush. Slender-horned spineflower is known only from the following four populations: Lytle Creek, Santa Ana River, Temescal Creek, and San Jacinto River. It blooms between April and June; suitable habitat for it occurs in Cajon Wash and Lytle Creek.

Santa Ana Woolly-Star

This state and federally endangered species also is found on alluvial fans and coastal sage brush. It has blue flowers which bloom from June through August. The Santa Ana woolly star is known from historic sightings in Orange County and San Bernardino area, but has not been observed in Los Angeles or Kern counties. The populations have been extirpated in Orange County. This species is now found only in San Bernardino County along the Santa Ana River. It has been recorded several times in the vicinity of Devore, and may potentially occur on the Cajon Wash and Lytle Creek floodplains.

Many-stemmed Dudleya

Many-stemmed dudleya is a succulent perennial herb found in coastal sage scrub, chaparral, and grasslands. It is found on dry stony places, below 2,000 feet in Los Angeles, San Bernardino, Orange, Riverside and San Diego counties. Its yellow flowers bloom May through June.

Chaparral/Coastal Sage Scrub-Associated Sensitive Wildlife Species

Sensitive wildlife species potentially occurring in these habitats along or adjacent to the ROW include, the orange-throated whiptail (*Cnemidophorus hyperthyrus*), San Diego horned lizard (*Phrynosoma coranatum blainvillei*), California gnatcatcher (*Polioptila californica)*, Los Angeles pocket mouse (*Perognathus longimembris brevinasus*), Merriam's kangaroo rat (*Dipodomys merriami parvus*), and American badger (*Taxidea taxus*).

Orange-throated Whiptail

The range of this lizard extends from northern Orange County west to the coast and south to Baja California. To the east, its range extends to Colton and Beaumont, at least 10 miles southeast of the pipeline route. Reports of occurrences of this species from the San Gabriel Mountains are attributed to observations of western whiptails with orange or pink throats; the orange-throated whiptail itself has not be reported from the vicinity of the pipeline route and would not be expected to occur there.

San Diego Horned Lizard

The San Diego horned lizard is an inhabitant of coastal sage brush and chaparral, preferring friable, rocky, or shallow soils along the coast of southern California from Los Angeles to Baja. The more common form (*P. c. frontale*) occurs along the coast north of San Francisco Bay to Los Angeles and in the Sacramento Valley. Both utilize coastal sage scrub and chaparral habitats, and the two subspecies intergrade in the Los Angeles area, often making it difficult to distinguish between the two. It has frequently been recorded along the proposed ROW in Cajon Wash, Lytle Creek, near the Cajon Summit, and in the vicinity of Baldy Mesa.

California Gnatcatcher

This gnatcatcher prefers low, dense coastal sage brush habitat in arid washes, on mesas, and on slopes of coastal hills. The California gnatcatcher is currently under consideration by the U.S. Fish and Wildlife Service for listing as an endangered species. It was recently recorded as occurring at the confluence of Lytle Creek and the Cajon Wash.

Los Angeles Pocket Mouse

Grasslands and coastal sage brush habitat are the preferred habitat of this species. It can be found in open ground with fine sandy soils where it may hide under weeds and leaves rather than dig extensive burrows. It has been recorded in the vicinity of the project ROW in the Cajon Pass.

American Badger

This species prefers grasslands, savannahs, and mountain meadows although it does utilize other habitats. It requires friable soil and open, uncultivated ground for digging burrows, and it preys upon rodents. It has been observed on Forest Service land in the vicinity of the ROW.

Merriam's Kangaroo Rat

Although not currently listed as a sensitive species, there is growing concern for this subspecies. It may soon be a candidate for federal listing. It inhabits light sandy soil across much of southern California including the Mojave Desert. It is known to occur in the Cajon Wash.

Sensitive Species Found on the Pipeline Route

Only two sensitive plants (*Chorizanthe spinosa* and *Syntrichopappus lemonii*) were found along the proposed pipeline route between the 12-Gauge Lake Tank Farm and Cajon Wash.[15] No federally or state-listed plants, nor any federal candidate 1 or 2 species were observed. The two special-status plants found appear on the California Native Plant Society List 4, a "watch list" for species whose habitat is declining rapidly and which could become rare in the immediate future if present trends continue. These species are tracked by the NDDB and currently do not have special state or federal designations.

Several sensitive bird species were observed or heard in the vicinity of the pipeline ROW, although no nests were mapped within the area of proposed direct impact. These species include the golden eagle, prairie falcon, mountain quail, loggerhead shrike, LeConte's thrasher, willow flycatcher (a migrant, not singing or exhibiting any other breeding behavior), yellow warbler, Bell's sage sparrow, and ashy rufous-crowned sparrow. With the exception of the willow flycatcher (state-listed endangered), these species are all CDFG species of special concern or federal candidates (category 2) for listing. The ROW passes through one yellow warbler territory in Cajon Wash and probably through as many as ten Bell's sage sparrow territories on Baldy Mesa.

The speckled dace, a federal candiddate (category 2) and a species of special concern, was observed in Cajon Creek. Desert tortoises (endangered) were found in the northernmost segment of the pipeline route. Three lizards that are candidates, category 2, and/or species of special concern were observed: silvery legless lizard (one individual), coastal western whiptail (common over approximately 24 miles of the route), and San Diego horned lizard. Also, individuals of a disjunct population of zebra-tailed lizard were observed. Although the species as a whole is not sensitive, the isolation and uncertain status of the disjunct population qualifies it as rare and therefore of concern under CEQA guidelines (see Technical Appendix I).

4.3.2 KRAMER SEGMENT ALTERNATIVE

The first 13 miles of the Kramer Segment Alternative was surveyed by biological staff during June and July 1992 as a portion of the original field work performed for the project. The following highlights only the significant biological resource differences between the proposed and alternative routes. Terrestrial habitats include Desert Saltbush Scrub, Mojave Creosote Scrub and Joshua Tree Woodland as previously described in Section 4.3.1. Sensitive plants of desert habitats and desert associated sensitive wildlife species are described in Section 4.3.1. In particular, desert tortoises inhabit the ROW and immediate vicinity in the northernmost segment. The remainder of the route is as described for M.P. 25 to M.P. 142 of the proposed route.

4.3.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The two mile deviation of the Sycamore South Segment Alternative from the proposed route has not been subjected to any biological investigations as part of this document. Therefore the presence or absence of existing biological resources on this segment is not known at this time. The remainder of the route is as described for M.P. 0 to M.P. 73 and M.P. 74 to M.P. 142 of the proposed route.

4.3.4 M-70 PIPELINE

The information in this section is summarized from the Draft EIR/EIS on the proposed M-70 Pipeline replacement and optimization project. Attempts have been made to make the discussion of communities and community-associated species consistent with that presented in the Cajon Pipeline analysis.

Freshwater Biology

The pipeline route traverses the watersheds of several stream systems including Grapevine Creek, Gorman Creek, Piru Creek, Castaic Creek, Santa Clara River, Newhall Creek, Bull Creek, Los Angeles River, and Ballona Creek. Water in these drainages provides habitat for many species of aquatic invertebrates. Three of the streams along the route have well-developed riparian areas bordering them, namely Piru Creek, Newhall Creek, and Santa Clara River. Most of the drainages are bordered by poorly-developed wetlands or no vegetation at all and generally provide poor cover.

Fourteen species of game fish, including the rainbow trout, occur in these drainages. Trout are known to spawn primarily in a tributary of the Santa Clara River (Sespe Creek), which is located downstream from the pipeline route, but they may also spawn in Piru Creek and in the Santa Clara River directly downstream from the crossing. Although rainbow trout are planted in Piru Creek, a viable native population has recently been discovered in the creek near the pipeline route, between M.P. 21 and 22.5 (Joyce, personal communication, 1990a). Other game fish which may occur in the Santa Clara River include game channel catfish, largemouth bass, white catfish, black bullhead, brown bullhead, rifle sculpin, and coast range sculpin.

Non-game fish are typically found in intermittent streams in California, and are represented by 11 non-native and 7 native species. The Santa Ana sucker, a native non-game fish, is known to occur in Santa Clara River and Angeles National Forest drainages, and is likely to occur at the pipeline crossing of the Santa Clara River. A population of unarmored threespine stickleback occurs in the Santa Clara River, both upstream and downstream of the pipeline crossing. Other native non-game fish which may occur in the Santa Clara River crossing include partially armored threespine stickleback, arroyo chub, Pacific lamprey, and staghorn sculpin.

The pipeline route crosses the California Aqueduct at two locations along the route (M.P. 14.5 and 20.5). The aqueduct is comprised of an underground tunnel at these crossings. A high diversity of fish species occurs throughout the California Aqueduct, including the aqueduct tunnel near the project area. The predominant game fish species include channel catfish, striped bass, and white catfish.

Terrestrial Biology

Vegetation

The botanical investigation consisted of a review of literature on vegetation types, as well as sensitive plant species and habitats in the Los Angeles and southern Kern counties, and field surveys of the pipeline route. The potential occurrence of sensitive plant species was based upon a review of standard botanical references, an inventory of sensitive plants in California, and previous environmental reports.

Both uplands and wetlands are represented in the eight major vegetation types that occur along the pipeline route. The upland vegetation types include oak woodland, scrub, chaparral, non-native grassland, and ruderal vegetation. Two wetland communities occur, freshwater marsh and riparian habitat. Vegetation sub-types can be distinguished within some of these major community types, based upon physiognomy and differing percentages of dominant species. A description of vegetation types along the pipeline route is provided below. All vegetation types occurring along the route include many introduced and naturalized species, indicative of land that has experienced previous or continuing disturbance.

Oak Woodland

Three types of oak woodlands occur near the pipeline route, classified according to the dominant oak species. Oak trees are an important resource, and five species are protected by Senate Concurrent Resolution No. 17, including all of the oak species discussed in this section. The most common oak woodland along the proposed pipeline route is dominated by the evergreen coast live oak (*Quercus agrifolia*).

This moderately dense woodland is typically found on north-facing slopes, shaded ravines and small canyons along the coastal ranges of California. Common understory species in the project area include: Great Basin sage (*Artemisia tridentata*), black mustard (*Brassica nigra*), giant rye grass (*Elymus condensatus*), slender wild oats (*Avena barbata*) and brom grasses (*Bromus* ssp.).

Blue oak woodland, dominated by the deciduous blue oak (*Q. douglasii*), is found primarily in the lower foothills surrounding the Great (Central) Valley of California. Common understory species include brom grasses, California buckwheat (*Eriogonum fasciculatum*), and other annual forbs and grasses.

Valley oak savannah is characterized by a more open canopy with a grassy herbaceous stratum, rather than a distinct closed woodland. The deciduous valley oak (*Q. lobata*) is typically the only tree present. The valley oak savannah was once common on the foothills in western Los Angeles County but is now extremely limited due to agriculture and urbanization.

Scrub

Three distinct scrub sub-vegetation types occur along the pipeline route: rabbitbrush scrub, juniper scrub, and coastal sage scrub. Rabbitbrush scrub consists of low growing shrubs, dominated by the gray rabbitbrush (*Chrysothamnus nauseosus*), which flowers in late summer or fall. It occurs in historically disturbed areas such as old agriculture fields, overgrazed pastures, or burned areas. The rabbitbrush scrub along the pipeline route also contains other shrubs such as four-winged saltbush (*Atriplex canescens*), shadscale (*Atriplex lentiformis* ssp. *breweri*), California buckwheat, and groundsel (*Senecio douglasii*).

Juniper scrub is actually an ecotonal vegetation type, occurring between rabbitbush scrub and chaparral in the Hungry Valley area. It is dominated by juniper (*Juniperus occidentalis* ssp. *australis*), and associated with scrub oak (*Quercus dumosa*), buckwheat, elderberry and rabbitbrush.

Coastal sage scrub consists of low, soft-stemmed shrubs or woody herbs, which are often resinous and pungently scented. Common species in the project area include California sagebrush (*Artemisia californica*), purple sage (*Salvia leucophylla*), black sage (*Salvia mellifera*), California buckwheat, yerba santa (*Eriodictyon crassifolium*), pine bush (*Haplopappus pinifolius*) and Our Lord's candle (*Yucca whipplei*).

Chaparral

Chaparral contains a dense, often impenetrable cover of sclerophyllous broad-leaved shrubs, averaging 1.5-3 meters tall. The impenetrable stands contain no understory vegetation at all, while the more open stands contain a herbaceous-grassy understory. Chaparral contains a high species diversity, including the following species: manzanita (*Arctostaphylos* sp.), chamise (*Adenostoma fasciculatum*), California buckwheat, ceanothus (*Ceanothus* spp.), scrub oaks (*Quercus dumosa* and *Q. garryana* var. *semota*), sugar bush (*Rhus ovata*) and laurel sumac (*Rhus laurina*). Often, disturbed areas are dominated almost exclusively by the 1-3 meter tall chamise shrub.

Non-native Grassland

Non-native grassland is an invasive vegetation type that has replaced most of the native grasslands in California. It occurs on coastal plains, foothills, and valleys. It is dominated by introduced grasses and herbs such as wild oat (*Avena barbata*), brome grasses (*Bromus* spp.), wild mustards (*Brassica* ssp.), and London rocket (*Sisymbrium irio*).

Ruderal Vegetation

Ruderal vegetation is dominated by introduced, weedy, perennial herbs and grasses which invade disturbed areas. It is commonly found along roadsides and in areas with severe human-caused disturbance. It intergrades and occurs as a main component with all other vegetation types along the pipeline route. Common species in the project area include telegraph weed (*Heterotheca grandiflora*), smartweed (*Polygonum aviculare*), sand bur (*Ambrosia acanthicarpa*), mustards (*Brassica geniculata*, *B. nigra*) and sunflower (*Helianthus annuus* ssp. *lenticularis*).

Planted Vegetation

Planted vegetation occurs in urbanized areas where primarily non-native species have been introduced. None of the plants originated naturally in the area, although they may be reproducing independently. Planted trees along the pipeline route include tree of heaven (*Ailanthus altissima*), sycamore (*Platanus racemosa*), cottonwood (*Populus fremontii*), pines (*Pinus attenuata*, *Pinus* spp.), peppertree (*Schinus molle*) and fan palm (*Washingtonia filifera*).

Freshwater Marsh

Freshwater marshes consist of emergent, perennial monocots growing in soils that are permanently or frequently saturated with fresh water. Freshwater marshes are commonly associated with an outer band of riparian woodlands, which are also dependent upon a freshwater source, which shifts seasonally from surface water to groundwater. The following species may be found in marshy areas along the pipeline route: mexican rush (*Juncus mexicana*), marsh parsley (*Apium leptophyllum*), giant bulrush (*Scirpus acutus*), tule (*Scirpus californicus*), and cattail (*Typha domingensis*).

Riparian Vegetation

Riparian areas along the pipeline route are represented by three distinct types: riparian scrub, riparian woodland, and riparian forest. Most riparian areas in southern California occur along intermittent drainages and ponds. Riparian scrub is dominated by various shrubs and herbs that typically occupy open, active areas of the stream channel. The amount of total cover ranges from dense thickets of tall woody shrubs and young trees to more open scrubs of low shrubs and herbs. Riparian scrub represents an early successional stage of a riparian woodland that is subject to annual flooding and scouring. Common species in the project area include mulefat (*Baccharis glutinosa*), sandbar willow (*Salix hindsiana*), bull nettle (*Urtica holosericea*), and creeping wild-rye (*Elymus triticoides*).

Riparian woodlands consist of a dense, broadleaf woodland growing in fine, well-drained alluvial soils. Riparian woodlands were once extensive along streams and rivers in southern California, but have been severely reduced in acreage and stature due to agriculture and urbanization. They are dominated by the following trees: cottonwood, sandbar willow, arroyo willow (*Salix lasiolepis*), and red willow (*Salix laevigata*).

Riparian forests are dominated by large deciduous trees with dense, overlapping canopies 30 to 60 feet high. The understory usually contains shrubby willows and mule fat. Riparian forests have also been severely reduced by agriculture, urbanization and flood control. They are comprised of the same common plant species as riparian woodland, in addition to tall sycamore and alder (*Alnus rhombifolia*) trees.

Plant Community Distribution

Rabbitbrush scrub occurs in the northern portion of the route, near the southwestern end of Kern County to Pyramid Lake. Juniper scrub occurs in the transition between rabbitbrush scrub and chaparral in Hungry Valley, only between M.P. 13 and M.P. 17 along the pipeline route.

Chaparral begins near Pyramid Lake, at about M.P. 16, continuing southeast across the Tehachapi Mountains, through the Angeles National Forest. The chaparral often forms a closed cover in most of this area, or it may intergrade with coastal sage scrub on the drier east-facing slopes. Blue oak woodlands are also found near the pipeline route in the Angeles National Forest. Coastal sage scrub dominates the pipeline route near the south end of the Angeles National Forest and into Marple Canyon (M.P. 28 to 31). The cover of shrubs in this area is relatively uniform except in areas which have recently been burned and are sparsely vegetated.

Non-native grassland covers the lower part of Marple Canyon between the northbound and southbound lanes of I-5, and into the town of Castaic (M.P. 31.5 to 34). Scattered oak, willow, eucalyptus, and pepper trees occur throughout this area, especially at the base of the canyon. A narrow drainage at the base of the canyon contains scattered willow, cottonwood and sycamore trees and mulefat shrubs.

Coastal sage scrub dominates the undeveloped hillsides of the Santa Clarita Valley, with oak woodlands in the canyons. A few of the undeveloped hills near McBean Parkway contain weedy expanses of non-native grassland and oak savannah. Most of the land directly adjacent to the pipeline route has been developed and contains patches of planted and ruderal vegetation.

South of the City of Newhall, the pipeline route continues south through the San Gabriel Mountains, which are primarily dominated by coast live oak woodlands, and secondarily by coastal sage scrub (M.P. 47 to 51). Well developed riparian woodlands border Newhall Creek, which runs along Sierra Highway and the pipeline route. There is no more natural vegetation south of Bee Canyon along the pipeline route, due to the urbanization in the San Fernando Valley.

South of the San Fernando Valley, the pipeline continues into the Santa Monica Mountains along Sepulveda Blvd. Portions of this segment contain well developed associations of chaparral (M.P. 67.5 to 70.5). The chaparral in this area is extremely dense, dominated by large shrubs such as holly-leaved cherry, ceanothus, sugar bush and laurel sumac. The canyons and drainages contain an even higher species diversity and include elderberry, lemonade berry and willows.

Urban development is encountered again where the pipeline route continues along Sepulveda Blvd. into Westwood and the Los Angeles Basin. There is no more natural vegetation south of this area to the end of the pipeline at the Torrance refinery (M.P. 70.5 to 90.5).

Major streams along the route that contain major riparian vegetation at or near pipeline crossings include Gorman Creek, Piru Creek, Castaic Creek, Santa Clara River, Newhall Creek, Weldon Canyon, and Bee Canyon. Major riparian vegetation is defined as stream-side vegetation dominated by woody plant species, relatively undisturbed, and with low numbers of weedy, invasive species.

Wildlife

A wide diversity of habitats is represented along the pipeline route due to the complex topography, and variability in the availability of water and degree of urbanization. The range of each species is dependent upon availability of food, cover, water or other more specific habitat factors.

Major wildlife habitats surrounding the pipeline route include: grassland/ruderal, scrub, chaparral, oak woodland, and riparian. The wildlife habitat types correspond to the major vegetation types with the following exceptions: 1) grassland and ruderal vegetation types are grouped together, and; 2) riparian scrub, riparian woodland, riparian forest and freshwater marsh are group into the riparian habitat type. The five wildlife habitats are described below.

Grassland/Ruderal

Grasslands along the pipeline route are dominated primarily by introduced weedy plant species and therefore support similar wildlife species that ruderal habitats may support. Grasslands, however, tend to cover larger continuous areas than do ruderal habitats and therefore support a higher diversity of wildlife species. The majority of grassland/ruderal habitat occurs in the Peace Valley region, between Lebec and Pyramid Lake (M.P. 1 to M.P. 13). Other discontinuous areas of ruderal habitat (including agricultural fields) are found all along the pipeline route in urbanized areas.

Scrub/Chaparral/Riparian

Wildlife of this community is described in Section 4.3.1.

Oak Woodland

Oak woodlands primarily consist of relatively small areas of a moderate to dense cover, dominated by the coast live oak, but may also include more open savannahs dominated by the valley oak. Oak woodlands occur along sloping foothills and in canyons throughout the pipeline route. The trees provide excellent cover for many larger mammals such as California mule deer and coyote.

Sensitive Species

Sensitive Aquatic Species

Sensitive, threatened, or endangered fish species that occur in the vicinity of the proposed route include the unarmored threespine stickleback, the Santa Ana sucker, arroyo southwestern toad, and the southwestern pond turtle. The unarmored threespine stickleback is a federal and state listed endangered species, while the Santa Ana sucker and the southwestern pond turtle are both California Species of Special Concern.

Unarmored Threespine Stickleback

The unarmored threespine stickleback has been reported from the upper part of the Santa Clara River in Soledad Canyon and in the Los Angeles Basin. The Los Angeles Basin populations had been extirpated by the mid-1940s, restricting the species to the upper Santa Clara River. During a study conducted in 1989 by Dr. Thomas R. Haglund, a small population of the endangered stickleback was collected from Castaic Creek, near the confluence with the Santa Clara River, about 1 mile west of the pipeline route. A dry reach of Castaic Creek upstream from this location prevents this population from extending to the Castaic Creek pipeline crossing. The stickleback occurs along a substantial portion of the Santa Clara River from McBean Bridge downstream to Del Valle. This portion of the river contains year-round water with quiet pools for the fish and is known as the Del Valle essential habitat. Stickleback are likely to utilize the river at the pipeline location for movement under high water conditions. However, no suitable pool habitat is present at the specific stream crossing of the river for more permanent populations of stickleback. The Santa Clara River, both upstream and downstream of the pipeline, is high quality stickleback habitat.

Santa Ana Sucker

The Santa Ana Sucker occurs in the Santa Clara River and Angeles National Forest drainages. Although it is a sensitive species, it is fairly widespread. It is likely to occur at the Santa Clara River pipeline crossing.

Arroyo Southwestern Toad and Southwestern Pond Turtle

The arroyo southwestern toad and southwestern pond turtle occur in ponded areas of permanent streams with dense vegetation, throughout southern California. Neither species is expected at the Santa Clara River crossing due to a lack of slow-moving and ponded water. The southwestern pond turtle has been observed in Piru Creek about 500 feet west of the proposed pipeline route, and it may occur at other locations along the Santa Clara River and in Piru Creek. The arroyo southwestern toad occurs in Piru Creek, possibly near the pipeline route.

Sensitive Plant Species

There are nine sensitive plant species found along the M-70 Pipeline route. Two of them, Santa Ana woolly star (*Eriastrum densiflorum* ssp. *sanctorum*) and slender-horned spineflower (*Centrostegia leptoceras*), are both federally and state-listed as endangered. One species, Nevin's barberry (*Mahonia nevinii*) is state-listed (but not federally listed) as endangered. The remaining seven species are either candidates for federal listing or appear on CNPS List 1A or 1B. These species include San Fernando Valley chorizanthe (*Chorizanthe parryi* var. *fernandina*), Los Angeles sunflower (*Helianthus nuttallii* ssp. *parishii*), Brauton's milk vetch (*Astragalus brautonii*), many stemmed dudleya (*Dudleya multicaulis*), short-joint beavertail (*Opuntia basilaris* var. *brachyclada*), Lyon's pentachaeta (*Pentachaeta lyonii*), Gambel's watercress (*Rorippa gambellii*), San Gabriel bedstraw (*Galium grande*), and Peirson's morning glory (*Calystegia peirsonii*).

Santa Ana Woolly Star
The Santa Ana woolly star is described in Section 4.3.1. This species is now found only in San Bernardino County along the Santa Ana River.

Slender-horned Spineflower
Slender-horned spineflower is described in Section 4.3.1. There are two potential habitats for slender-horned spineflower along the pipeline route: Castaic Creek and South Fork Santa Clara River. Flood control activities and utility corridors have severely disturbed the sandy soils in South Fork Santa Clara River, so slender-horned spineflower would not be expected to occur at this location. The Castaic Creek location was surveyed in June 1990, at which time the spineflower would be conspicuous, and none were found. Habitat at the pipeline crossing is too disturbed for the slender-horned spineflower.

San Fernando Valley Chorizanthe and Nevin's Barberry
These species occur in dry, sandy coastal sage scrub habitats. San Fernando Valley chorizanthe is also known from historic occurrences in the Santa Clarita Valley area, but has been extirpated from all other previously reported locations. Potential habitat exists in Castaic Creek. The only remaining population of Nevin's barberry in Los Angeles County is in San Francisquito Creek, about 3 miles from the proposed pipeline. Since Nevin's barberry occurs at elevations below 2,000 feet and San Fernando chorizanthe occurs at elevations below 2,500 feet, potential habitat adjacent to the pipeline route is only at the Santa Clarita Valley. No specimens of Nevin's barberry or San Fernando Valley chorizanthe were found during a survey of the route in June 1990, although both would be conspicuous at this time.

Short-joint Beavertail

Short-joint beavertail is known to occur at elevations above 4,000 feet in the San Gabriel and San Bernardino Mountains. An historic occurrence is located about two miles east of the proposed route in a steeply walled canyon. However, the low elevation of this site casts doubt on the accuracy of the taxonomic identification. No *Opuntia* specimens were observed during field surveys. Short-joint beavertail would not be expected to occur along the pipeline route due to its low elevation.

Pierson's Morning Glory

Pierson's morning glory could occur in the vicinity of the pipeline route in the Angeles National Forest between M.P. 17.4 and 20 and in sparsely vegetated areas in Marple Canyon between M.P. 28 and 33.6. The species occurs in the Santa Clarita Valley and adjacent mountains, in disturbed areas, along roadsides, and in open scarcely vegetated areas. Appropriate habitat locations were surveyed in June, and no specimens of Pierson's morning glory were found.

Lyon's Pentachaeta, Brauton's Milk Vetch, and Many-Stemmed Dudleya

These species occur in chaparral and grassland habitats near the coast. They are known only from the Santa Monica Mountains and Orange County area. Lyon's pentachaeta occurs in limestone soils, which were not observed along the pipeline route; thus, it is not expected to occur within the pipeline route. Many-stemmed dudleya has not been observed in the project area and is only found in dry, sandy and stony soil places in open areas with low competition from other plants. Although it has never been observed in the project area, appropriate habitats were surveyed in June, and no specimens of many stemmed dudleya were observed. Brauton's milk-vetch is not likely to occur along or near the pipeline route due to the lack of suitable low elevational, coastal habitat.

Gambell's Watercress

Gambell's watercress occurs in freshwater marshes and swamps. It has historically been found in interior wetlands of San Diego, San Bernardino, and Los Angeles counties, and coastal wetlands of San Luis Obispo County. It has been extirpated from all interior wetlands and now exists only at three small populations in San Luis Obispo County. Thus, it is not expected in the project area.

San Gabriel Bedstraw

San Gabriel bedstraw occurs in chaparral and oak woodland habitats, between 2200 and 3300 feet elevation. It is known only from the southern exposures of the San Gabriel Mountains and is not expected in the project area.

Sensitive Wildlife Species

Four of the twenty sensitive wildlife species with potential habitat near the pipeline route are federally and/or state-listed as endangered: California condor (*Gymnogyps californianus*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), least Bell's vireo (*Vireo bellii pusillus*), and willow flycatcher (*Empidonax traillii*). Six species are candidates for federal listing: California black-tailed gnatcatcher

(*Polioptila melanura californica*), loggerhead shrike (*Lanius ludovicianus*), Tehachapi pocket mouse (*Perognathus alticola inexpectatus*), white-eared pocket mouse (*Perognathus alticola alticola*), Tehachapi slender salamander (*Batrachoseps stebbinsi*), and San Diego horned lizard (*Phrynosoma coronatum blainvillei*). Nine of the remaining species are considered species of special concern by the CDFG. Two of these sensitive species are considered taxa of concern to the California Natural Diversity Data Base.

California Condor

A pair of California condors have recently (January 1992) been reintroduced to the wild. All other living California condors are in captivity at zoos. Condor habitat has been set aside in the Los Padres National Forest near Lake Piru (Sespe Condor Sanctuary), for the release of condors into the wild. Prime California condor nesting habitat occurs in steep canyons with big cone douglas fir trees at Pyramid Lake and Piru Creek near the pipeline route. Several historic California condor nest sites still exist along Pyramid Lake and Piru Creek just below the dam. Andean condors are now common in this area, and have been observed in the historic California condor nests. The Pyramid Lake/Piru Creek area is considered sensitive condor habitat for roost sites, nest sites, and flyways.

Least Bell's Vireo

The least Bell's vireo periodically nests along the Santa Clara River about 5 miles downstream of the pipeline crossing. Nesting vireos have not been observed along the river upstream of this population, including near the pipeline crossing. However, migrating individuals are likely to occasionally utilize the extensive suitable willow woodland habitat that occurs along portions of the river in the project area. A single individual was observed during a survey in May 1988 in the Santa Clara River, about 1.25 miles upstream of the pipeline crossing.

Western Yellow-billed Cuckoo

The western yellow-billed cuckoo occurs in dense, relatively undisturbed riparian woodlands. There are historic records of this species in the Angeles National Forest in the project area. Current nesting populations are restricted to the Sierra Nevada and Prado Basin in Orange County.

Loggerhead Shrike and California Black-tailed Gnatcatcher

The loggerhead shrike and California black-tailed gnatcatcher are known to occur in the Angeles National Forest. The shrike occurs in relatively pristine chaparral habitats while the gnatcatcher occurs in coastal sage scrub habitats. Both may occur near the pipeline ROW in areas with suitable undisturbed habitat.

Tehachapi Slender Salamander

The most southwestern known occurrence of Tehachapi slender salamander is near Ft. Tejon, about 2 miles northwest of the north end of the pipeline. The species occurs in canyons and north-facing slopes, under moist leaf letter in oak woodland habitats. No suitable habitat is found near the pipeline route.

San Diego Horned Lizard

Historic occurrences of the San Diego horned lizard are recorded for Placerita Canyon (east of the Newhall), and in other areas in Los Angeles County. Because the subspecies of horned lizard intergrade, the taxonomic interpretation of specimens found in these areas is problematic. Either form of the coast horned lizard may occur within the pipeline ROW, although *P. c. frontale* is more likely to occur north of the Los Angeles Basin.

Tehachapi Pocket Mouse

Tehachapi pocket mouse is known from scattered localities in Los Angeles and Kern counties between 3,500 and 6,000 feet in elevation. The habitat for Tehachapi pocket mouse varies from old agricultural fields to grassland and desert scrub. Potential habitat for this species is found adjacent to the proposed route in the Gorman area (M.P. 1 to 11).

White-Eared Pocket Mouse

The white-eared pocket mouse is known only from the western portion of the San Bernardino Mountains (Williams, 1986). Its habitat is dry floors and slopes in pine forests and sagebrush scrub vegetation types. It is not expected to occur along the pipeline route because its habitat no longer exists in this region.

Pale Big-Eared Bat

The Pale big-eared bat is very sensitive to disturbances and is not expected to occur near the pipeline route due to lack of undisturbed habitat.

Badger

Badger habitat in the project area may be found in grassland and oak woodland habitats.

Bird Species of Concern

Five species of birds considered to be declining or threatened in the region may be found along the pipeline route - Cooper's hawk, golden eagle, southern spotted owl, yellow warbler and yellow-breasted chat. The yellow breasted chat, Cooper's hawk and yellow warbler have been observed in the Valencia area in 1988 and 1989 surveys and may occur at the Santa Clara River crossing along the pipeline ROW. Populations of the southern spotted owl still exist in the Angeles National Forest in the vicinity of Piru Creek, but suitable habitat is not found along or near the pipeline route. The golden eagle may occur throughout Southern California as a migrant, but is not found near human population areas.

4.3.5 PACIFIC PIPELINE

The information in this section is summarized from the proponent's Environmental Assessment for the Proposed Pacific Pipeline Project.

Freshwater Biology

The proposed route traverses 35 stream or river crossings that have a moderately high to high wildlife value based on level of disturbance, presence of water, potential sensitive species occurrence, and vegetation types. These include Canada de Alcatraz, Canada San Onofre, Canada del Molino, Arroyo Hondo, Arroyo Quemado, Tajigues Creek, Canada del Refugio, Canada del Capitan, Las Llagos Canyon, Gato Canyon, Las Varas Creek, Dos Pueblos Creek, Bell/Winchester Canyon, Carneros Creek, San Jose Creek, Maria Ygnacio Creek, Santa Monica Creek, Franklin Creek, Carpinteria Creek, Ventura River, Ellsworth Barranca, Todd Barranca, Santa Paula Creek, Sespe Creek, Piru Creek, San Martinez Grande Canyon, San Martinez Chiquito Canyon, Santa Clara River, and several unnamed drainages. These crossings either support significant riparian vegetation, or provide aquatic habitat (e.g. perennial flow) for sensitive species.

Characteristic gamefish species include: black bullhead, and steelhead. Nongame fish species include: arroyo chub, California roach, carp, fathead minnow, green sunfish, hardhead, mosquito fish, Pacific lamprey, pond smelt, prickly sculpin, rife sculpin, Santa Ana sucker, speckled dace, spittail, staghorn sculpin, threadfin shad, tidewater goby, and unarmored threespine stickleback.

Terrestrial Biology

Vegetation

The following vegetation types are found in the vicinity of the proposed pipeline route: oak woodland, chaparral, coastal scrub, non-native grassland, ruderal vegetation, fresh water marsh, riparian woodland and coastal salt marsh. Refer to Section 4.3.1 and 4.3.5 for a description of these plant communities, excluding coastal salt marsh and eucalyptus woodland.

Oak Woodland

This community is found at only a few places along the proposed ROW. The primary occurrence was in isolated pockets along the coast and as a dominant cover type in the Santa Susana Mountains. The southern type of the oak woodland is found at the crossing of the Santa Susana Mountains.

Coastal Bluff

This sensitive habitat (or habitat element) is found at two places on the ROW: on the cliff faces of the coast in Santa Barbara County and near Carpinteria on the seaward side of the railroad, and it extends into the Southern Pacific Railroad ROW.

Valley Needlegrass Grassland

This sensitive community is found adjacent to the ROW near its beginning at Gaviota. The dominant species is the perennial grass *Stipa pulchra* and the shrub *Haplopappus squarrosus*. Within this community at Gaviota is found the sensitive species *Hemizonia increscens* subspecies *villosa*. Approximately 500 specimens were found in the 100-foot swath on the inland side of the ROW.

Coastal Strand

This community is found at only one location, where it exists in a very degraded form. Practically none of the typical native vegetation of this community is present at these sites. The common species are *Carpobrotus edulis*, and *Carpobrotus aequlaterus*. This community is considered sensitive; however the degraded form in which it is found along the ROW is not significant.

Annual or Nonnative Grassland

Most of these communities were scattered along the coast segment of the proposed route.

Ruderal

This community is the most common found during the survey, occupying extensive portions of the 100-foot Southern Pacific Railroad ROW. The 50 feet on both sides of the railroad tracks are regularly sprayed with herbicide, and all large vegetation has been removed.

Riparian Woodland

This community is found at many stream crossings along the ROW. Common species are the willows *Salix lasiolepis* and *Salix lasiandra*. Extensive riparian woodlands occur at several places along the pipeline corridor: the Ventura River, Santa Clara River at Oxnard, and Santa Clara River between Santa Paula and Santa Clarita (Saugus). Riparian habitats are frequently bordered by grassland and oak woodland habitat in undisturbed situations and by ruderal habitats where disturbed. Even during the fourth year of drought, the Santa Clara River bed in the Val Verde quandrangel supports stretches of flowing water and dense riparian vegetation. This is one of the last remnants of such riparian growth along the Santa Clara River. Southern cottonwood-willow riparian forest is found at the confluence of Castaic Creek and the Santa Clara River.

Salt Marsh

Salt marshes consist largely of perennial graminoids and forbs, the latter often succulent, ranging in height from 0.2 to 2 meters. Plant species occur occasionally in zones but more often in patches. Plant distributions may also display a sequence of overlapping species along an elevational gradient.

Vascular plants common to salt marsh habitats include cordgrass (*Cordylanthus ssp.*), pickleweed (*Salicornia ssp.*), California seablite (*Suaeda californica*), seashore saltgrass (*Distichlis spicata*), bulrush species (*Scirpus spp.*), birdsbeak (*Cordylanthus maritimus*), cattails (*Typha spp.*), shoregrass (*Monanthochloe littoralis*), and cinquefoil (*Potentilla egedei*).

Along the shoreline route from Gaviota to Ventura, there are four salt marsh habitats of critical concern: (1) Coal Oil Point/Devereux Slough, (2) Goleta Slough, (3) Carpinteria Salt Marsh, and (4) Santa Clara River Mouth. These critical resources are described briefly below.

Coal Oil Point, a headland with an associated inland lagoon (Devereux Slough) is located about 6 miles west of the Santa Barbara western city limits. Coal Oil Point and Devereux Slough have both been designated as "environmentally sensitive habitats" in the Santa Barbara County Coastal Plan of 1982. Coal Oil Point Reserve, 117 acres fronting mostly west of the point and including 37 acres of marsh habitat along Devereux Slough, was also designated as part of the University of California (UC) Natural Reserve System (NRS) in 1970. As such, access to this property is restricted by the UC system and is used as a research site by UC Santa Barbara.

Goleta Slough is a 360-acre wetland area adjacent to the Santa Barbara airport and UC at Santa Barbara. It is a large complex of saltwater wetlands, vernal pools, and freshwater wetlands, and it provides habitat for a large variety of birds.

Carpinteria Salt Marsh is probably the most critical shoreline habitat along the proposed pipeline corridor. Carpinteria/El Estero Salt Marsh has been part of UC NRS since 1977, when 120 acres of the marsh's total 230 acres were purchased from Sandyland Cove Trust. The marsh is the habitat of an endangered plant, salt marsh bird's beak. Degraded salt marsh was found along the ROW where it crosses Carpinteria Salt Marsh. The salt marsh community was present within the 100-foot Southern Pacific Railroad ROW. This is considered to be a sensitive community even where it is degraded.

Eucalyptus Woodland

Eucalyptus habitats demonstrate a wide variety in structure including: thickets with little understory, scattered trees with a well developed understory, or more commonly a dense stand with a closed canopy. Most eucalyptus have been planted in rows for wind protection or in groves for lumber production. Trees vary from 87 to 133 feet tall at maturity and between 9 and 15 inches in diameter.

Where eucalyptus has been planted in rows or groves, the typical understory is composed of annual grasses and other weedy species. In dense stands, litter deposition and the allelopathic nature of the trees prevents a shrubby understory from developing. Eucalyptus established along stream courses often invades existing adjacent vegetation.

Wildlife

Oak Woodland

Oak Woodlands support a high diversity of vertebrate species. In addition to the species listed for riparian woodlands, the following species are frequently associated with this type of habitat: California legless lizard, striped racer, American raven, Nuttall's woodpecker, downy woodpecker, broad-handed mole, and bobcat.

Eucalyptus Woodland

Because of the high habitat homogeneity and high chemical content of eucalyptus trees, this type of habitat generally has low wildlife value. However, in the area of the project, eucalyptus woodland provides roosting habitat for a number of resident and migratory raptor species, greatly enhancing its wildlife value. Sensitive species such as the Coopers hawk, sharp-shinned hawk, and the northern harrier, as well as turkey vultures and other hawks and owls, roost in eucalyptus groves. Individual trees within eucalyptus groves also provide critical overwintering roost sites for migrating Monarch butterflies, also a sensitive species. Other vertebrates seen in this type of habitat include Anna's hummingbird, scrub jay, common crow, turkey vulture, red-tailed hawk, brown towhee, rock dove, mourning dove, and grey fox.

Chaparral/Coastal Sage Scrub

Because it provides dense cover and abundant, varied food resources, coastal sage scrub is an important wildlife habitat. Commonly encountered species include the western fence lizard, side-blotched lizard, California legless lizard, western whiptail, western rattlesnake, striped racer, California thrasher, scrub jay, white-crowned sparrow, brown towhee, rufous-sided towhee, California ground squirrel, dusky-footed woodrat, bobcat, coyote, and mule deer, in addition to most of the species listed for oak woodlands. Sensitive species such as the cactus wren and the San Diego horned lizard also occur in this habitat along the proposed corridor where particular habitat elements, such as *Opuntia* cacti, are present.

Coastal Strand

Species commonly found here include a disjunct population of the California legless lizard as well as the western fence lizard, side-blotched lizard, western whiptail, house finch, western meadowlark, California thrasher, scrub jay, white-crowned sparrow, and California ground squirrel. Sensitive species such as the globose dune beetle occur in this sandy coastal habitat.

Grasslands

Vertebrates associated with this habitat include the western fence lizard, western rattlesnake, gopher snake, racer, common kingsnake, western meadowlark, western kingbird, Say's phoebe, turkey vulture, red-tailed hawk, northern harrier, Botta's pocket gopher, California ground squirrel, California vole, striped skunk, grey fox, coyote, and mule deer. Sensitive species such as the American badger are likely to occur in this habitat.

Coastal Salt Marsh

Common species commonly found in coastal salt marsh areas include the clapper rail, common egret, snowy egret, marsh hawk, savannah sparrow, American avocet, willet, western sandpiper, California vole, Norway rat, and house mouse.

Sensitive Species

Sensitive Wildlife Species Distribution

Federally endangered species found along the pipeline route include the California brown pelican, California least tern, light-footed clapper rail, least Bell's vireo, and unarmored threespine stickleback. Belding's savannah sparrow, willow flycatcher and western yellow-billed cuckoo are state endangered.

Federal candidate species include: tidewater goby, California red-legged frog, southwestern pond turtle, San Diego horned lizard, snowy plover, willow flycatcher, California black rail, Belding's savannah sparrow, western snowy plover, California black-tailed gnatcatcher, California brackish water snail, arroyo southwest toad, globose dune beetle, Pacific pocket mouse and southern marsh harvest mouse.

Gaviota to Carpinteria

The tidewater goby has been observed in Arroyo Hondo, Arroyo Quemado, Tecolote Canyon, Bell Canyon, Carpinteria Creek, and Carpinteria/El Estero Marsh. Monarch butterfly roosting areas are located near the following stream crossings: Arroyo Quemado, Las Varass, Las Llagos, Dos Pueblos Canyon, Eagle Canyon, Canada del Cementerio, Cameros Creek, Montecito Creek, and at additional locations throughout this area. Hammond's two-striped garter snake, willow flycatcher, pallid bat, and tricolored blackbird occur in Canada, San Onofre, Canada del Molino, and Arroyo Hondo. The Pacific kangaroo rat and California black-tailed gnatcatcher are found at Canada de Leon. Harbor seal haul-out areas are found about 1,750 feet south of the ROW at El Capitan State Beach Park, about 1,000 to 1,250 feet south of the ROW between Dos Pueblos and Eagle Canyons, 500 feet south of the ROW near Carpinteria Creek. Goleta Slough, less than 1 mile south of the ROW, contains the California brackish-water snail, Belding's savannah sparrow, California least tern, southern marsh harvest mouse, light-footed clapper rail, and osprey. The California red-legged frog and southwestern pond turtle are or were previously found in many drainages in this area.

Raptors in the area include Swainson's and Ferruginous hawks at Canada del Cementerio (Gaviota) and at grasslands in Dos Pueblos Canyon quadrangle. Several roosting sites for turkey vulture, Cooper's hawk, sharp-shinned hawk, golden eagle, northern harrier, and other raptors are found in Gaviota, Tajiguas, Dos Pueblos Canyon and Goleta quadrangles.

Ventura/Santa Clara River Mouths

A large complex of wetlands exist at the mouth of the Ventura River. This area provides important habitat for California red-legged frog, southwestern pond turtle, least Bell's vireo, tricolored blackbird, willow flycatcher, and a large variety of shorebirds, gulls, and terns (including the endangered California least tern). Tidewater goby and steelhead trout are also present at the river's mouth. Nearby dunes may provide habitat suitable for the globose dune beetle. The mouth of the Santa Clara River provides habitat for tidewater goby, California brown pelican, Belding's savannah sparrow, and California least tern. Least Bell's vireo has been observed in the Santa Clara River bed near Saticoy and in two locations near Santa Paula.

Santa Paula to Newhall

Southwestern pond turtles and California red-legged frogs are found in ponds and other areas with standing water all along the Santa Clara River, from Santa Paula Creek to Santa Clarita (Newhall). The arroyo southwestern toad is also found in Santa Paula Creek. Western yellow-billed cuckoo, bank swallow, and California black-tailed gnatcatcher have also been observed in the Santa Paula area, although suitable habitat is not found within 1,000 feet on either side of the ROW.

The state of California operates a fish hatchery for rainbow trout near Fillmore along the Santa Clara River bed. All water for the hatchery comes from wells in the immediate area. Water from the hatchery is routed to a nearby watercress farm, which is in a riparian area that may support least Bell's vireo and the unarmored threespine stickleback, among other species. The Santa Clara River drainage, from San Martinez Grande Canyon to the head of Soledad Canyon is critical habitat for the endangered unarmored threespine stickleback. The Santa Ana sucker has been observed in the Santa Clara River drainage from San Francisquito Canyon to the vicinity of Santa Paula, depending on water flow conditions.

The Santa Clara River bed in the Val Verde quadrangle supports dense vegetation (trees and shrubs) and areas of flowing water. Key habitat for least Bell's vireo, western yellow-billed cuckoo, Cooper's hawk, black-shouldered kite, tricolored blackbird, yellow warbler, yellow-breasted chat, southwestern pond turtle, and California red-legged frog is found in this area. Thick riparian vegetation supports a wide variety of breeding bird species. This is one of the last remnants of high quality riparian vegetation in the area.

The coastal cactus wren, Pacific kangaroo rat, and San Diego horned lizard are found in drier coastal scrub areas along the Santa Clara River in the Fillmore, Val Verde, and Newhall quadrangles. The pipeline route through the San Fernando Pass and along the western edge of the San Fernando Valley was not surveyed for sensitive species at this time because of lack of access. Other sources (Dames & Moore, 1991) report that the only sensitive species in proximity to the pipeline route in this area is the San Diego horned lizard.

In Ventura and Los Angeles Counties the Los Angeles pocket mouse is found in sandy soils that overlay gravelly soils in inland valleys vegetated by arid scrub. Suitable habitat occurs in the upper Santa Clara River Valley between Interstate Highway 5 and Saugus and north of the Southern Pacific Railroad tracks between Saugus and Newhall and in the Simi Valley through the Santa Susana Pass. This species may utilize portions of the pipeline corridor for nesting and foraging.

Sensitive Plant Species

Plant species observed in the vicinity of the proposed pipeline include: two federally endangered species, salt marsh bird's beak (*Cordylanthus maritimus maritimus*) and the slender-horned spineflower (*Centrostegia leptoceras*), and two state endangered species, Nevin's barberry (*Mahonia nevinii*), and Gaviota tarplant (Hemizonia *increscens* ssp. villosa).

Of the plants listed as federal or state candidate species, Ventura marsh milk vetch and San Fernando Valley spineflower are presumed extinct in California because they have not been seen or collected in the wild for many years. Gambel's yellow cress, Nevin's barberry, Peirson's morning glory, and Contra Costa goldfields are rare throughout their range.

The Gaviota tarplant is found at the westernmost end of the pipeline route; populations are reported as damaged or dying in two of four mapped locations, but this plant is present within 100 feet north of the ROW. Hoffman's nightshade may be found south of U.S. Highway 101 (U.S.-101).

Due to urbanization, Contra Costa goldfields is believed to have been extirpated in the vicinity of the pipeline route in this area. It was last observed near the Isla Vista School about a mile south of the ROW. Salt marsh bird's beak is found in Carpinteria/El Estero marsh to the south of the ROW within the western third of the marsh.

4.3.6 FOUR CORNERS PIPELINE

The Four Corners Line 90 Pipeline is an existing pipeline extending 185 miles from Cadiz, San Bernardino County to Los Angeles. Construction would be limited to four new pumping and three new heater stations. The northern portion of the route (approximately 75 miles) is located within the Mojave Desert. The major vegetation communities encountered include Desert Saltbush Scrub, Mojave Creosote Bush Scrub, Joshua Tree Woodland, Semi-Desert Chaparral, Southern Riparian Scrub, and Alluvial Wash Channel. These communities are described in Section 4.3.1. Wildlife and sensitive species associated with these communities are also described in Section 4.3.1.

Assuming that no habitat disturbance would be required to maintain or upgrade the existing pipeline, the direct habitat impacts of this alternative would be limited. However, construction of new heating and pumping stations and replacement of portions of pipeline could affect any of the special-status species of desert habitats, including Mojave tarplant (*Hemizonia mojavensis*), short-joint beavertail (*Opuntia basilaris var. brachyclada*), Mojave monkeyflower (*Mimulus mohavensis*), Mojave spineflower (*Chorizanthe spinosa*), Lemmon's syntrichopappus (*Syntrichopappus lemmonii*), Panamint dudleya (*Dudleya saxosa saxosa*), Booth's evening primrose (*Camissonia boothii boothii*), Mojave indian-paintbrush (*Castilleja plagiotoma*), Barstow woolly-star (*Eriophyllum mohavense*), desert tortoise (*Gopherus agassizi*), Mohave ground squirrel (*Spermophilus beccheyi*), golden eagle (*Aquila chrysaetos*), prairie falcon (*Falco mexicanus*), and LeConte's thrasher (*Toxostoma lecontei*).

ENDNOTES

1. Op. Cit., Holland, 1986.
2. Op. Cit., Rindaulb, 1991.
3. Holland, Robert F., *Preliminary Descriptions of the Terrestrial Natural Communities of California*, Department of Fish and Game, 1986.
4. Rindlaub, Katherine, *Cajon Pipeline Project Botanical Survey 12-Gauge Lake Tank Farm Site to Cajon Wash*, California, 1991.
5. Op. Cit., Holland, 1986.
6. Op. Cit., Rindaulb, 1991.
7. Op. Cit., Rindaulb, 1991.
8. Barbour, Michael and Major, Jack (eds.), *Terrestrial Vegetation of California*, California Native Plant Society Special Publication No.9, 1988.
9. Ibid.
10. State of California Department of General Services, 1988.
11. Ibid.
12. op.cit, Rindlaub, 1991.
13. SCDGS, 1988.
14. San Diego Association of Governments and recon, *Draft Comprehensive Species Management for the Least Bell's Vireo*, 1990.
15. Op. Cit., Rindlaub, 1991.

4.4 AIR QUALITY

4.4.1 CAJON PIPELINE

The proposed Cajon Pipeline route is located in two air basins. Of the 142 miles of pipeline, approximately 59 miles or 42 percent would lie within the Southeast Desert Air Basin (SDAB). The portion of the pipeline to be located in the SDAB is within the jurisdictional boundary of the San Bernardino County Air Pollution Control District (SBCAPCD). The proposed 750,000 barrel storage facility and the Cajon Terminal and Adelanto pump stations would reside in the SDAB. The remaining 83 miles or 58 percent of the pipeline would lie within the South Coast Air Basin (SCAB), under the jurisdiction of the South Coast Air Quality Management District.

Meteorology and Climatology

Southeast Desert Air Basin

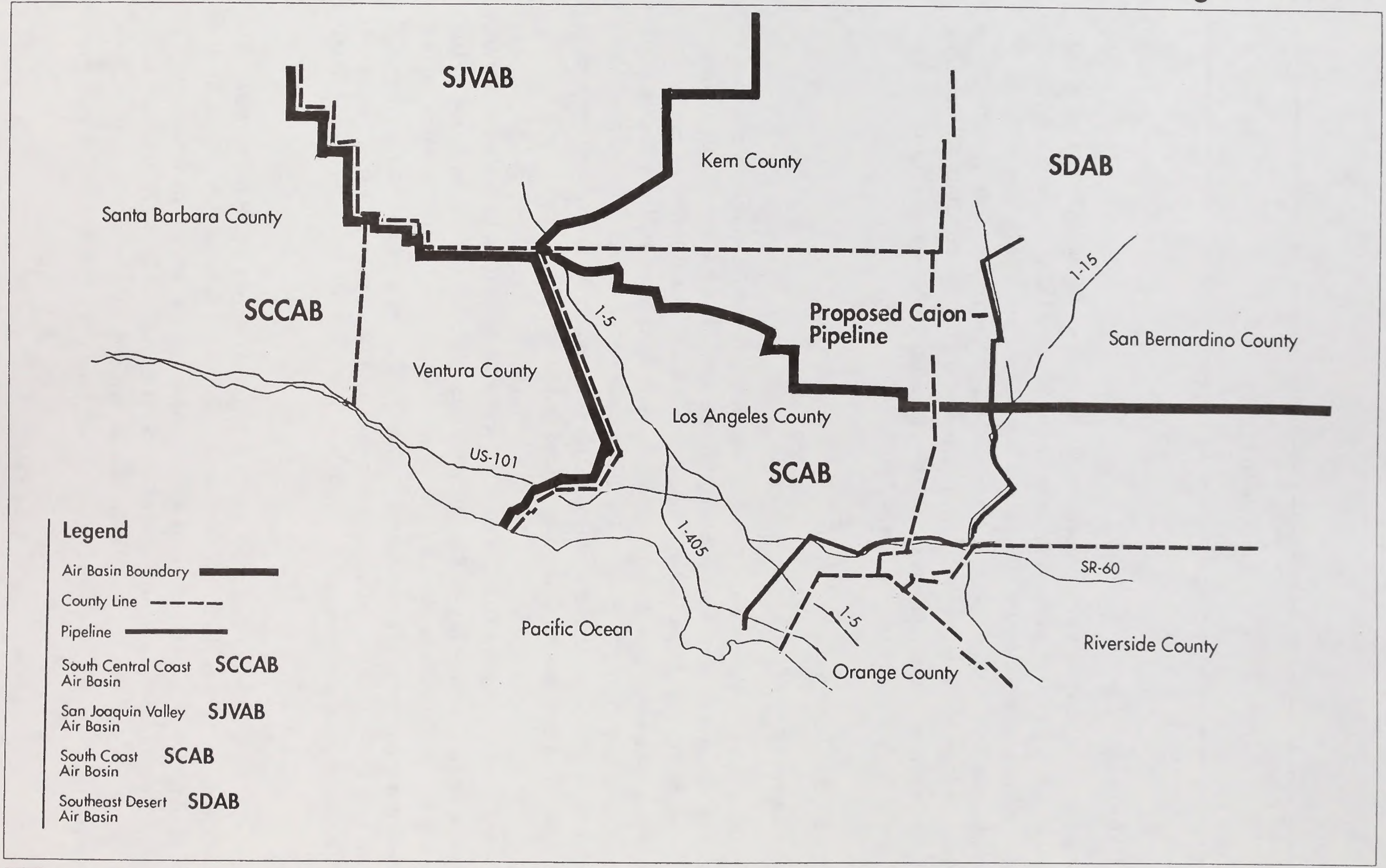
The Southeast Desert Air Basin includes the hottest and driest portions of California. It comprises the eastern and northeastern portion of San Bernardino, Riverside, Kern, Los Angeles and San Diego counties, and all of Imperial County (Figure 4.4.1-1). The air basin covers an area of 33,636 square miles. It is separated from the coastal regions by mountain ranges, which also provide a climatological boundary. Elevations range from 235 feet below sea level at the Salton Sea, to 11,485 feet at the summit of Mount San Gorgonio. The basin can be divided into two distinct parts, the High and Low Desert. The proposed project would be located in the High Desert, also called the Mojave Desert.

The northern portion, or the High Desert, of the SDAB is bounded by the Great Basin Valleys Air Basin to the north, the San Joaquin Valley Air Basin to the northwest, the SCAB to the southwest and the Low Desert portion of the SDAB to the south. The High Desert is sheltered from oceanic influences and large inter-basin transport of air pollutants by mountain barriers. These mountain barriers which extend from north to south allow limited inter-basin transport at mountain passes. In the vicinity of the proposed project some inter-basin transport occurs from the SCAB to the SDAB at the Cajon Pass and at Soledad Canyon.

The seasons in the SDAB are marked principally by differences in temperature and not by rainfall. The seasonal temperature differences are large due to the absence of marine influences. At Daggett, 27 miles to the east of the Cajon Terminal site, the average temperature ranges in January and July are 60.6°F to 35°F and 103.8°F to 72.9°F, respectively. Diurnal temperature ranges are 20 to 30°F in January and 30 to 40°F in July. During the winter the area is covered by a moderate anticyclonic circulation, with less frequent periods of frontal activity. The frontal systems, which contribute most of the precipitation

Air Basins of Southern California

Figure 4.4.1-1



Source: California Air Quality Data, California Air Resources Board, 1988 received in the basin, are relatively weak by the time they reach the basin. Temperatures in the SDAB rarely drop below zero because the basin is protected from cold air masses that move southward from Canada and because of the low latitude of the basin.

During the summer a thermal trough, which varies daily in intensity and orientation, overlies the basin. While the rugged mountainous country inhibits normal circulation, the trough does permit inter-basin exchange with coastal locations through the passes. The relative humidity in summer is very low which promotes intense heating during the day in summer and dramatic cooling at night. The dry clear conditions in the SDAB result in intense solar radiation which is highly conducive to photochemical smog formation.

Spring and fall are transitional seasons with the spring progression between the winter period of frontal activity and the dry summer period. Fall is the transition period from the hot dry season back to the season of frontal activity.

The SDAB tends to be windy since there is little friction generated between the moving air and the low, sparse vegetation cover. The rapid daytime heating of the lower air over the desert leads to convective activity which tends to increase surface winds during the warm part of the day when convection is at a maximum. In the winter, the rapid cooling in the surface layers at night delays this exchange and results in a high frequency of calm conditions.

Subsidence inversions over the SDAB typically occur at heights between 6,000 to 8,000 feet above the desert surface. A low frequency of elevated inversions is typical for all seasons. Radiation inversions are common at night throughout the year. These dissipate early in the day in summer but persist throughout much of the day during the winter, limiting the mixing in the lower atmosphere to a height of 200 to 2,000 feet.

South Coast Air Basin

The SCAB, a 6,600 square mile basin, is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean in the southwest with high mountains forming its remaining boundaries. The semi-permanent high-pressure zone influencing the SCAB results in a mild climate, tempered by cool sea breezes. This climatological pattern is interrupted occasionally by periods of hot weather, winter storms and Santa Ana winds.

The annual average temperature varies little throughout the SCAB, ranging from the low to middle 60's Fahrenheit. The eastern portion, with less oceanic influence, shows greater variability in temperatures. All portions of the basin have had recorded temperatures well above 100°F in recent years with January the coldest month.

Most of the annual rainfall recorded in the SCAB falls between the months of November and April. Summer rainfall typically occurs as widely scattered thundershowers near the coast, with heavier showers to the east and over the mountains. The number of rainy days varies from five to ten percent of all days in the SCAB, with the frequency of rain higher near the coast. Annual average rainfall varies from nine inches to fourteen inches with higher amounts measured at foothill locations. Monthly and yearly rainfall totals are extremely variable.

The typically light wind speeds in the SCAB have a limited capability to disperse air contaminants horizontally. The dominant wind pattern is a daytime sea breeze and a night-time land breeze. This regime is occasionally disturbed by winter storms and strong northeasterly Santa Ana winds from the mountains and deserts north of the SCAB.

Most of the pollution produced on a given day in the spring and early summer days moves out of the basin through mountain passes, or is lifted by the warm, vertical currents produced by heating of mountain slopes. This process is less pronounced in the late summer through the winter months because of lighter wind speeds and the earlier appearance of offshore (drainage) winds. The vertical dispersion of air pollutants in the SCAB is hindered by the presence of a persistent temperature inversion in the lower layers of the atmosphere. Winter inversions frequently break by mid-morning, thereby preventing contaminant build-up. The combination of low wind speeds, abundant sunshine and low inversions produces the greatest concentration of pollutants.

In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and nitrogen oxides to form typical photochemical smog. Carbon monoxide is less of a problem in summer as opposed to winter, because inversions are not as low and intense in the surface boundary layer (within one hundred feet of the ground) and because horizontal ventilation is better in summer.

Air Quality Rules, Regulations and Standards

Federal

The 1970 Clean Air Act gave the U.S. Environmental Protection Agency (EPA) the authority to set federal ambient air quality standards. The act indicated the need for primary standards to protect public health and secondary standards to protect public welfare from effects such as visibility reduction, soiling, nuisance, and other forms of damage. It also required that the federal standards be designed to protect those people most susceptible to respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by illness, and persons engaged in strenuous work or exercise (all termed "sensitive receptors").

In 1971, the EPA established federal standards for five major criteria air pollutants: photochemical oxidants (ozone), carbon monoxide (CO), suspended particulate matter (originally the standard applied to particulates of any diameter, termed total suspended particulates or TSP, but the standard was changed in 1987 to apply only to particulates less than 10 microns in diameter, termed PM_{10}, nitrogen dioxide (NO_2), and sulfur dioxide (SO_2).[1] The federal and state standards, given in Table 4.4.1-1, provide acceptable concentrations for specific contaminant levels in order to protect sensitive receptors from adverse effects as indicated in Table 4.4.1-2.

The 1977 Clean Air Act Amendments (passed after many states failed to meet the five-year deadline for achieving the federal standards) required that each state identify areas within its borders that did not meet federal primary standards (i.e., nonattainment areas) and devise a State Implementation Plan (SIP), subject to EPA approval, that would guarantee attainment no later than the end of 1987. The Clean Air Act Amendments did not specify what course of action would be undertaken by the EPA if states failed to meet the 1987 attainment deadline. After the year 1987, many states, including California, were required to implement EPA interim policies. The passage of the amended federal Clean Air Act in 1990 again provides guidelines to be followed by states to meet National Ambient Air Quality Standards (NAAQS).

Monitoring data for 1990 shows that violations of the federal standards are still being measured in both the SCAQMD and the SBCAPCD. As a result of these measurements, these districts will not be able to declare regional attainment.

State

The adoption of the Mulford-Carrell Act (SB490) in 1967 created the Air Resources Board (ARB). The ARB coordinates and oversees both state and federal air pollution control programs in California, including the review and approval of attainment plans. As part of this responsibility, the ARB monitors existing air quality, establishes state air quality standards (which in many cases are more stringent than federal standards, as shown in Table 4.4.1-1), limits allowable emissions from vehicular sources, administers grants to local districts, and is responsible for overseeing the State Implementation Plan (SIP) to meet federal Clean Air Act requirements. The SIP is a compilation of air quality plans prepared by air quality districts throughout the state. The state air quality standards shown in Table 4.4.1-1 were established in order to protect sensitive people from adverse health effects as indicated in Table 4.4.1-2.

In 1988, the California Clean Air Act (CCAA), Assembly Bill 2595 (Sher) was passed, identifying air quality goals, planning mechanisms, regulatory strategies, and standards of progress. The goal of the CCAA is to attain the state ambient air quality standards by the "earliest practicable date." Air districts that had not attained the state standards for ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide were required to prepare attainment plans by June 30, 1991, with updates to the plans occurring in three-year intervals. Under the CCAA, the ARB is required to adopt more stringent emission controls for fuels, consumer products and mobile sources, including motor vehicles, marine vessels, locomotives, utility engines and farm and construction equipment.

TABLE 4.4.1-1
Federal and State Ambient Air Quality Standards[1]

Pollutant	Averaging Time	California Standard[3]	Federal Standards[2] Primary[4]	Federal Standards[2] Secondary[5]
Ozone	1-hour	>0.09 ppm (176.6 μg/m^3)	>0.12 ppm (235.5 μg/m^3)	>0.12 ppm (235.5 μg/m^3)
Carbon Monoxide	1-hour	>20 ppm (22.9 μg/m^3)	>35 ppm (40.1	>35 ppm (40.1
	8-hour	≥ 9.1 ppm (10.4 mg/m^3)	≥ 9.5 ppm (10.9 mg/m^3)	≥ 9.5 ppm (10.9 mg/m^3)
Nitrogen Dioxide	1-hour	> 0.25 ppm (470.1 μg/m^3)	- -	- -
	Annual Arithmetic Mean	- -	> 0.0534 ppm (100.4 μg/m^3)	> 0.0534 ppm (100.4 μg/m^3)
Sulfur Dioxide	1-hour	> 0.25 ppm (654.1 μg/m^3)	- -	- -
	3-hour	- -	- -	0.50 ppm (1308.2 μg/m^3)
	24-hour	≥ 0.05 ppm (130.8 μg/m^3)	> 0.14 ppm (366.3 μg/m^3)	- -
	Annual Arithmetic Mean	- -		- -
Suspended Particulate Matter (PM^{10})	24-hour	> 50 μg/m^3	> 150 μg/m^3	> 150 μg/m^3
	Annual Geometric Mean	> 30 μg/m^3	-	-
	Annual Arithmetic Mean		> 50 μg/m^3	> 50 μg/m^3
Sulfates	24-hour	≥ 25 μg/m^3	-	-
Lead	Monthly Average	≥ 1.5 μg/m^3	-	-
	Quarterly Average	-	≥ 1.5 μg/m^3	≥ 1.5 μg/m^3
Hydrogen Sulfide	1-hour	≥ 0.03 ppm (42 μg/m^3)	- -	- -
Vinyl Chloride	24-hour	≥ 0.01 ppm (26 μg/m^3)	- -	- -
Ethylene	1-hour	≥ 0.50 ppm	-	-
	8-hour	≥ 0.10 ppm	-	-
Visibility Reducing Particles	1 Observation	Visibility < 10 miles [7]	-	-

---

[1] Concentrations expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25 degrees C and a reference pressure of 760 mm of mercury.
Note: ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas. μg/m^3 = micrograms per cubic meter. mg/m^3 = milligrams per cubic meter.

[2] National Standards, other than ozone and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one.

[3] California standards for ozone, carbon monoxide, sulfur dioxide (1 hour), nitrogen dioxide and particulate matter - PM_{10}, are values that are not to be exceeded. The sulfates, lead, hydrogen sulfide, vinyl chloride, and visibility-reducing particles standards are not to be equaled or exceeded.

[4] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by the Environmental Protection Agency.

[5] National Secondary Standards: the levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the implementation plan is approved by the EPA.

[6] At locations where the State standards for ozone and/or suspended particulate matter are violated. National standards apply elsewhere.

[7] Prevailing visibility is defined as the greatest visibility which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors. Standards based on hours with relative humidity less than 70%.

Source: California Air Resources Board; SCAQMD 1990 Air Quality Summary

TABLE 4.4.1-2
Health Effects Summary Of The Major Criteria Air Pollutants

Air Pollutant	Adverse Affects
Ozone	Eye irritation. Respiratory function impairment.
Carbon Monoxide	Impairment of oxygen transport in the bloodstream, increase of carboxyhemoglobin. Aggravation of cardiovascular disease. Impairment of central nervous system function. Fatigue, headache, confusion, dizziness. Can be fatal in the case of very high concentrations in enclosed places.
Nitrogen Dioxide	Risk of acute and chronic respiratory illness.
Sulfur Dioxide	Aggravation of chronic obstruction lung disease. Increased risk of acute and chronic respiratory illness.
Total Suspended Particulate	Increased risk of chronic respiratory illness with long exposure. Altered lung function in children. With SO_2, may produce acute illness.
PM_{10}	Particulate matter 10 microns or less in size (PM_{10}) which may be inhaled and possibly lodge in and/or irritate the lungs.
Sulfates	Decreased lung function. Aggravation of asthmatic symptoms, cardio-pulmonary disease.
Lead	Impairment of blood function and nerve construction. Behavioral and learning problems in children.
Hydrogen Sulfide	Impairment of the body to utilize oxygen. Chronic exposure to low concentrations may result in conjunctivitis (red eye) or pulmonary edema.
Vinyl Chloride	Angiosarcoma of the liver. Possibly other cancers. Possible effects on human reproduction.

[1] Curtis D. Dlaassen, Ph.D., Mary O. Amdur, Ph.D., John Doull, M.D., Ph.D., Casarett and Doull's Toxicology, 1986.

Source: California Air Resources Board.

Southeast Desert Air Basin

The SDAB currently does not meet either federal or state ozone standards. An air basin is designated as nonattainment for an air pollutant if it exceeds the California or NAAQS. Stationary sources locating in nonattainment areas are subject to the requirements of the New Source Review (NSR) rule (Regulation - XIII SBCAPCD).

Air pollutants that have been designated as attainment for a given air basin, in regards to the NAAQS are subject to federal Prevention of Significant Deterioration (PSD) requirements. The PSD regulations were established to preserve air quality in areas where the air is better than the NAAQS and to ensure that future development is consistent with the preservation of clean air. The PSD restricts the allowable increase of an ambient air pollutant concentration above a baseline concentration. The incremental increases in pollutants allowed under the PSD permit procedures are listed in Table 4.4.1-3. Three classes of the PSD requirements have been defined. Class I designates areas in which the lowest incremental increase in ambient air pollution is allowed and is typically reserved for national parks and other wilderness areas. Class II allows a higher incremental increase in air pollutants above a baseline, and is the standard designation for areas allowing moderate growth. Class III areas permit the most growth in sources of air pollutants.

To attain state and federal ambient air quality standards the SBCAPCD has recently adopted the 1991 Air Quality Attainment Plan (AQAP). The SDAB is classified as having "moderate" air pollution based on an estimated date of attainment of 1994. The proposed stationary source control measure M15: "Petroleum Processes Storage and Transfer," contained in the AQAP, is scheduled for adoption in Phase 3 of the Plan (late 1992). Currently District Rule 219, Subsection (o) exempts much of this industry and its equipment from permitting. District Rule 442, Subsection (h) also exempts this industry from its fugitive emission requirements. Under the proposed control measure M15, fugitive ROG emission reductions would be achieved through a more stringent inspection and maintenance program. Inspections would be conducted at minimum specified intervals, leaks detected would be required to be repaired or equipment replaced within a specified period. In addition, records of inspection and repair would be required to be maintained at the facility, available to SBCAPCD personnel upon request.

Recorded air quality monitoring data exists for San Bernardino and Los Angeles counties, through which the Cajon Pipeline project would pass. A three-year summary of the data collected for these counties and the corresponding federal and state air quality standards, are shown in Table 4.1.4-5. The data in the table indicates that ozone, CO and particulate levels measured in San Bernardino and Los Angeles counties are not in compliance with the federal standards and ozone, carbon monoxide, nitrogen dioxide and sulphur dioxide, and particulate levels are not in compliance with state standards.

TABLE 4.4.1-3
Allowable PSD Increments (µg/m³)

Pollutant	Class I	Class II	Class III
Sulfur Dioxide			
Annual Arithmetic Mean	2	20	40
24-hour maximum [1]	5	91	182
3-hour maximum	25	512	700
Total Suspended particulates			
Annual geometric mean	5	19	37
24-hour maximum	10	37	75

[1] Not to be exceeded more than once a year

The SBCAPCD operates a regional air quality monitoring network in order to gauge the SDAB's progress toward attainment and maintenance of federal and state ambient air quality standards. On the basis of monitoring data from all stations in the SDAB, the CARB has designated the entire SDAB as nonattainment with respect to the federal and State ozone standards.

The air quality monitoring data collected nearest to the proposed Cajon Pipeline project was recorded at the Barstow and Phelan air pollution monitoring stations. A three-year summary of the data collected at these sites and the corresponding federal and state air quality standards, are shown in Table 4.4.1-4. The data in the table indicates that ozone measured at the Barstow and Phelan air monitoring stations is not in compliance with the federal and state standards. Particulates measured at these stations are also in exceedance of the state standards. Because monitored levels of ozone are reflective of regional conditions, the ozone data adequately represents on-site conditions along the proposed project pipeline route. Measured particulates at the Barstow and Phelan air monitoring stations are more reflective of local conditions and may not accurately represent conditions at the project site.

South Coast Air Basin

The SCAB is currently nonattainment for both federal and state ozone, nitrogen dioxide, carbon monoxide, and particulate standards. The SCAQMD and the Southern California Association of Governments (SCAG) recently adopted the 1991 Air Quality Management Plan (AQMP). The 1991 AQMP, prepared in response to the CCAA, builds upon the 1989 AQMP prepared in response to the federal Clean Air Act. Control measures to be implemented under Tier I Control Measures, that could be adopted in the next five years, include the stringent use of add-on control devices for production, refining, and product distribution for the petroleum and gas production/distribution industries. Similar to the SBCAPCD, the SCAQMD also has New Source Review (NSR) rules and PSD rules that would apply to the Cajon Pipeline project.

TABLE 4.4.1-4
Air Pollutant Data Summary For Southeast Desert Air Basin
(1988-1990)
Air Monitoring Stations: Barstow (B) and Phelan (P)

Pollutant	Standard	Year					
		1988		1989		1990	
		B	P	B	P	B	P
OZONE:							
Highest 1-hour (ppm)		0.15	0.19	0.14	0.22	0.13	0.24
Days > 0.09	State	77	136	67	107	35	105
Days > 0.12 ppm	Federal	13	62	6	57	1	53
CARBON MONOXIDE							
Highest 1-hour (ppm)		13	10.0	7.0	4.0	5	9
Days > 20.0 ppm	State	0	0	0	0	0	0
Days > 35.0 ppm	Federal	0	0	0	0	0	0
Highest 8-hour		3.8	5.80	3.90	2.0	3.9	3.9
Days ≥ 9.1 ppm	State	0	0	0	0	0	0
Days ≥ 9.5 ppm	Federal	0	0	0	0	0	0
NITROGEN DIOXIDE							
Highest 1-hour (ppm)		0.09	0.10	0.10	0.08	0.14	0.06
Days ≥ 0.25 ppm	State	0	0	0	0	0	0
Annual mean		0.022	0.007	0.026	0.007	0.024	0.012
Year > 0.053 ppm	Federal	No	No	No	No	No	No
SULFUR DIOXIDE							
Highest 1-hour (ppm)		NM	0.03	NM	0.06	NM	0.05
Days > 0.25 ppm	State	NA	0	NA	0	NA	0
Highest 24-hour		NM	0.022	NM	0.024	NM	0.010
Days > 0.05 ppm	State	NA	0	NA	0	NA	0
Annual mean		NM	0.005	NM	0.001	NM	0
Year > 0.03 ppm	Federal	NA	No	NA	No	NA	No
PARTICULATES (PM_{10})							
Highest 24-hour (ppm)		63	NM	191	NM	381	NM
Days > 50 $\mu g/m^3$	State	5	NA	12	NA	12	NA
Days > 150 $\mu g/m^3$	Federal	0	NM	1	NA	1	NA

Units: ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter;
NM = Not Monitored;
NA = Not Available.
Sources: California Air Resources Board, Air Quality Data Summary, 1988-1990.

TABLE 4.4.1-5
Air Pollutant Data Summary For South Coast Air Basin (1988-1990)
Air Monitoring Stations: San Bernardino (SB) and Los Angeles (LA)

		Year					
		1988		1989		1990	
Pollutant	**Standard**	**SB**	**LA**	**SB**	**LA**	**SB**	**LA**
OZONE:							
Highest 1-hour (ppm)		0.35	0.34	0.32	0.34	0.33	0.29
Days > 0.09	State	193	205	192	192	161	168
Days > 0.12 ppm	Federal	153	165	143	140	115	121
CARBON MONOXIDE							
Highest 1-hour (ppm)		9.0	32.0	11.0	31.0	9	24
Days > 20.0 ppm	State	0	21	0	16	0	7
Days > 35.0 ppm	Federal	0	0	0	0	0	0
Highest 8-hour		7.6	27.5	8.10	21.8	6.6	16.8
Days ≥ 9.1 ppm	State	0	64	0	65	0	43
Days ≥ 9.5 ppm	Federal	NM	59	NM	58	NM	40
NITROGEN DIOXIDE							
Highest 1-hour (ppm)		0.21	0.54	0.20	0.34	0.20	0.28
Days ≥ 0.25 ppm	State	0	10	0	7	0	6
Annual mean		0.042	0.048	0.041	0.045	0.038	0.040
Year > 0.053 ppm	Federal	No	No	No	No	No	No
SULFUR DIOXIDE							
Highest 1-hour (ppm)		0.04	0.15	0.03	0.11	0.01	0.31
Days > 0.25 ppm	State	0	0	0	0	0	1
Highest 24-hour		0.012	0.036	0.009	0.024	0.008	0.036
Days > 0.05 ppm	State	0	0	0	0	0	0
Annual mean		0.002	0.004	0.001	0.003	0	0.002
Year > 0.03 ppm	Federal	No	No	No	No	No	No
PARTICULATES (PM_{10})							
Highest 24-hour (ppm)		289	149	271	172	475	161
Days > 50 $\mu g/m^3$	State	54	56	53	59	47	49
Days > 150 $\mu g/m^3$	Federal	6	0	5	1	6	1

Units: ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter;
NM = Not Monitored;
NA = Not Available.

Sources: California Air Resources Board, Air Quality Data Summary, 1988-1990.

4.4.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative is located in the Southeast Desert Air Basin. The air quality is as described in Section 4.4.1.

4.4.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative is located in South Coast Air Basin. The air quality is as described in Section 4.4.1.

4.4.4 M-70 PIPELINE

The information in this section is summarized from the Draft Environmental Impact Report Statement on the proposed M-70 Pipeline replacement and optimization project.

Meteorology and Climatology

The M-70 Pipeline route traverses two relatively distinct climatological subregions. The northern section of the pipeline route, from the Lebec Station (just north of Kern County/Los Angeles County line) to the Newhall Station, can be identified as the Transverse Range Subregion. The southern section from Newhall Station southward to the Torrance refinery is in the Los Angeles Basin. Climatic characteristics of each subregion are discussed below.

The Transverse Range Subregion is located in the Transverse Ranges which includes the complex terrain of the Tehachapi Mountains, the Santa Susana Mountains and the San Gabriel Mountains. Topographic relief in this segment ranges from relatively low valleys to high steep slopes and deeply-incised canyons. As a result, the climate in this region is less defined but is dominated by a relatively cooler, wetter climate than the San Joaquin Valley due to increased elevation. Climatology data for this region are generally sparse, but it is reasonable to expect stronger winds along the ridge tops with highly localized terrain channeling effects influencing winds in the canyons and small valleys. Strong winter winds are found here because of the higher elevations and excellent exposures; relatively strong summer winds result from the complex circulation patterns created by the combination of topography and climate. Diurnal temperature changes are generally large and nocturnal surface inversions should be common in terrain depressions.

From the Newhall Station southward to the terminus at the Torrance refinery, the M-70 Pipeline route is within an area of Mediterranean climate which consists of warm, dry summers and mild, damp winters. The basin is a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean in the southwest quadrant and high mountain barriers forming the remainder of the perimeter. The climate is generally mild, tempered by cool sea breezes near the coastal sections. This usually mild climatological pattern is occasionally interrupted by periods of extremely hot weather, winter storms, or Santa Ana winds. Because of its sheltered location and very light average wind speeds, the basin atmosphere has a limited capability to disperse air contaminants horizontally. Coupled with this is a characteristic of the Pacific

Maritime airmass which prevents vertical dispersion of air pollution. The presence of a cool marine layer capped by persistent warm subsiding air associated with the dominant high pressure weather patterns results in very frequent temperature inversions and a limited vertical mixing depth in the Los Angeles Basin. The geographical configuration and the southerly location of the basin permit a fairly regular daily reversal of wind direction (offshore at night and onshore during the day). With the concentrated population and industry, pollution tends to accumulate in this circulation pattern.

Air Quality Rules, Regulations, and Standards

The proposed M-70 Pipeline route is located in two air basins. The majority of the pipeline route (96%) resides within the South Coast Air Basin (SCAB); three of the pipeline pumping stations (Newhall, Saticoy and Slauson) and the Torrance refinery are also in this air basin. The remainder of pipeline route and the Lebec Station are located within the San Joaquin Valley Air Basin (SJVAB). Net increases of air emissions in these air basins resulting from construction activities and subsequent pipeline operations are subject to federal, state and local air quality rules, regulations, and standards.

Ambient air quality standards have been established by the U.S. Environmental Protection Agency (EPA) at the national level and the California Air Resources Board (ARB) at the state level. The current National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS) are presented in Table 4.4.1-1 of the Cajon Pipeline's air quality analysis.

Local air pollution control districts with jurisdiction for the proposed project include the SCAQMD and the KCAPCD. Both districts serve as the permitting authority, as well as implementors of New Source Review (NSR). Since the majority of the pipeline is located within the SCAB, the SCAQMD will have greater involvement in this project.

Existing Air Pollutant Levels

Air quality data for monitoring stations throughout California are summarized by the ARB in annual reports. Using annual reports for 1986, 1987, and 1988, air quality data for monitoring stations near the M-70 Pipeline route were tabulated. This data is summarized in Table 4.4.5-1, which compares the maximum concentrations at each station.

Data from Bakersfield Station B was selected to represent air quality conditions at the project's most northern pumping station in Lebec. Lebec is located in the most southern portion of the SJVAB. Currently there are no air quality monitoring stations in the Transverse Range Subregion. This generally consists of

TABLE 4.4.5-1
Summary of Air Quality Data Relevant To The
M-70 Pipeline Project
Maximum Concentration (ppm) by Averaging Time

Station and Year	O_3 1-Hour	NO_2		SO_2			CO		TSP (Annual Geometric Mean)		PM_{10} (Annual Arithmetic Mean)	
		1-Hour	Annual	1-Hour	24-Hour	Annual	1-Hour	8-Hour	24-Hour (ug/m^3)	Annual (ug/m^3)	24-Hour (ug/m^3)	Annual (ug/m^3)
Kern County												
1986	0.150^2	0.110	0.030	0.110	0.019	0.002	14.0	8.8	223	107.3	181	73.6
1987	0.140^2	0.100	0.029	0.060	0.016	0.003	10.0	6.9	376	76.3	188	64.4
1988	0.140	0.120	0.032	0.040	0.025	0.005	12.0	8.9	92	56.4_3	155	76.9
1989	0.140	0.130	0.033	0.060	0.024	0.007	14.0	11.0	339	114.1^3	237	80.6^3
Reseda												
1986	0.220^2	0.220	0.028	0.020	0.014	0.003	19.0	15.76	NA	NA	NA	NA
1987	0.220^2	0.150	0.032	0.020	0.014	0.002	15.0	12.1	NA	NA	NA	NA
1988	0.250	0.200	0.038	0.020	0.013	0.002	16.0	13.1	NA	NA	NA	NA
1989	0.230	0.180	0.039	0.020	0.013	0.002	17.0	12.5	NA	NA	NA	NA
West Los Angeles												
1986	0.200^2	0.240	0.042	0.020	0.014	0.003	11.0	8.6	175	54.3	NA	NA
1987	0.280^2	0.270	0.038	0.030	0.012	0.002	13.0	7.5	125	57.1	NA	NA
1988	0.240	0.260	0.034	0.030	0.013	0.002	15.0	8.6	125	62.9_3	NA	NA
1989	0.250	0.220	0.031	0.020	0.012	0.002	12.0	8.0	126	61.5^3	NA	NA
Hawthorne												
1986	0.190^2	0.230	0.042	0.090	0.019	0.005	21.0	15.0	182	69.5	NA	NA
1987	0.200^2	0.230	0.035	0.030	0.014	0.004	22.0	14.1	150	76.5	NA	NA
1988	0.220	0.270	0.036	0.150	0.024	0.005	23.0	15.9	248	79.7	NA	NA
1989	0.190	0.230	0.037	0.040	0.019	0.005	23.0	16.4	370	79.6	133	49.6^3

TABLE 4.4.5-1
Summary of Air Quality Data Relevant To The M-70 Pipeline Project
Maximum Concentration (ppm) by Averaging Time

Station and Year	O_3 1-Hour	NO_2		SO_2			CO		TSP (Annual Geometric Mean)		PM_{10} (Annual Arithmetic Mean)	
		1-Hour	Annual	1-Hour	24-Hour	Annual	1-Hour	8-Hour	24-Hour (ug/m^3)	Annual	24-Hour (ug/m^3)	Annual
N. Long Beach												
1986	0.180[2]	0.260	0.053	0.070	0.029	0.008	13.0	10.3	174	81.1	136	55.7
1987	0.170[2]	0.260	0.043	0.060	0.023	0.006	13.0	9.4	174	86.3	113	49.0
1988	0.160	0.280	0.047	0.050	0.024	0.007	13.0	10.3	292	85.2	120	48.2
1989	0.160	0.270	0.043	0.110	0.022	0.005	13.0	10.1	195	82.3	119	50.5
Standards												
NAAQS	0.120	-[5]	0.053	0.500[6]	0.140	0.080	35.0	9.0	260/150[5,8]	75/660[5,8]	150	50[9]
CAAQS	0.090	0.250	-	0.250	0.050[7]	-	20.0	9.0	-	-	50	30[10]

1. Kern County: All data provided is from Bakersfield except for TSP for 1987 and 1988 which is from the McKittrick Station.
2. Ozone Data prior to 1988 was subject to a CAAQS of .10 ppm.
3. Data presented are valid, but incomplete in that an insufficient number of valid data points were collected to meet EPA and/or ARB criteria for representativeness.
4. NA = not available.
5. Dash (-) indicates no standard exists for this category.
6. 3-hour NAAQS.
7. Must occur concurrently with violation of CAAQS for O_3 or PM_{10}.
8. Primary standard followed by secondary standard.
9. Annual arithmetic mean.
10. Annual geometric mean.

Source: California Air Resources Board, Annual Summary Report for 1986-1989.

forested mountain terrain and does not contain major emission sources. Additionally, because of the diversity in elevations within this subregion, pollutant dispersion is improved; hence, generally speaking, air quality within this subregion is expected to be better than the SJVAB and the SCAB.
At the Bakersfield station, both the NAAQS and CAAQS for ozone in all three years presented in Table 4.4.5-1 were violated. Other violations at the Bakersfield station occurred for total suspended particles (TSP) and PM_{10}. Pollutant concentrations below applicable standards included NO_2, SO_2, and CO.

For the SCAB subregion, four air quality stations were selected to represent atmospheric pollutant concentrations. These stations are located in Reseda, West Los Angeles, Hawthorne, and North Long Beach. Both the NAAQS and CAAQS for ozone were exceeded at all SCAB stations presented in Table 4.4.5-1. The 1-hour NO_2 CAAQS was exceeded at the West Los Angeles, Hawthorne, and North Long Beach station. Carbon monoxide 8-hour exceedances of the NAAQS and CAAQS occurred at the Hawthorne and North Long Beach stations. The 24-hour CAAQS for PM_{10} as well as the annual NAAQS and CAAQS was exceeded at the North Long Beach station.

4.4.5 PACIFIC PIPELINE

The information in this section is summarized from the proponent's Environmental Assessment for the Proposed Pacific Pipeline project.

Air Quality Rules, Regulations and Standards

The Pacific Pipeline route traverses two air basins. The South Central Coast Air Basin (SCCAB) includes Santa Barbara and Ventura Counties, and the South Coast Air Basin (SCAB) includes Los Angeles County. Approximately 55% (94 miles) of the Pacific Pipeline route is in the SCCAB, and 45% (76 miles) is in the SCAB. Emissions in the area crossed by the project are regulated by the Santa Barbara County Air Pollution Control District (SBCAPCD), the Ventura County Air Pollution Control District (VCAPCD), and the South Coast Air Quality Management District (SCAQMD) in Los Angeles County and the cities therein. All net increases in emissions of air pollutants which result from project construction and/or operation would be subject to the rules, regulations, and standards of these agencies. The project would also have to comply with all EPA and CARB rules and regulations. The current National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) are listed in Table 4.4.1-1 of the Cajon Proposal's air quality analysis. The attainment status for each of the areas through which the proposed pipeline passes are shown in Table 4.4.6-1.

TABLE 4.4.6-1
Attainment Status Of Air Basin Jurisdiction Traversed By The Pacific Pipeline

Pollutant	Attainment Status		
	SBCAPCD[4]	VCAPCD[5]	SCAQMD[6]
Nitrogen Dioxide (NO_2)	A	A	NA
Sulfur Dioxide (SO_2)	A(U[1])	A	A
Particulate Matter (PM-10)	NA(A[1])	NA(A[1])	NA
Carbon Monoxide (CO)	A	A	NA
Ozone (O_3)	NA	NA	NA
Sulfates (SO_4)	A	A	NA
Lead (Pb)[2]	A	A	A
Hydrogen Sulfide (H_2S)[3]	U	U	U
Visibility-Reducing Particles[3]	U	U	U

Source: ARB, 1989; ARB, 1991

[1] Federal designation where different
[2] Status not designated at federal level
[3] No federal standard exists
[4] Santa Barbara County Air Pollution Control District
[5] Ventura County Air Pollution Control District
[6] South Coast Air Quality Management District

A = Attainment
NA = Non Attainment
U = Unclassified

4.4.6 FOUR CORNERS PIPELINE

The existing Four Corners Line 90 Pipeline begins at Cadiz in San Bernardino County and extends 185 miles south and southeastward to Los Angeles. Of the total pipeline length, 109 miles or 59 percent lies in the Southeast Desert Air Basin (SDAB). The portion of the pipeline located in SDAB is within the jurisdiction boundary of the San Bernardino Air Pollution Control District (SBCAPCD). The remaining 76 miles or 41 percent of the pipeline lies within the South Coast Air Basin (SCAB), under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The meteorology and climate of these two air basins is described in Section 4.4.1. Air quality pollutant levels of the desert and urban regions are similar to those presented in Section 4.4.1.

ENDNOTES

1. Acceptable concentration levels for some pollutants are chosen after careful review of available data on health effects. Pollutants subject to federal ambient standards are referred to as "criteria pollutants" because the EPA publishes criteria documents to justify the choice of standards.

4.5 NOISE

4.5.1 CAJON PIPELINE

This section characterizes the noise environment and describes how operation and construction of the Cajon Pipeline would affect noise levels.

Community Noise

Community noise levels are measured in terms of A-weighted decibels (dBA), a measure of sound pressure to loudness closely attuned to the frequency response to the human ear. A-weighting reduces the pressure amplitude of low frequency sound components so that the overall loudness is rated at an equitable level. On this scale, the normal range of human hearing extends from about 0 dBA to about 140 dBA.

Environmental noise is generally not steady and fluctuates in intensity over time. Several rating scales have been developed for time-averaged measurement of community noise levels. The three most commonly used descriptors are the energy equivalent noise level (L_{eq}), the day-night average noise level (L_{dn}), and the Community Noise Equivalent Level (CNEL). The L_{eq} is a measure of the average energy content (intensity) of noise over any given period of time. The L_{eq} for one hour is therefore the average noise based on the acoustic energy content of the sound rather than the average sound pressure level. It can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level. L_{eq} is not measured directly but rather calculated from sound pressure levels measured in dBA. This descriptor is the basis for both the L_{dn} and CNEL scales.[1] The L_{dn} is the summation of hourly L_{eq} readings over a 24-hour period using a time-weighted noise scale. "Time-weighted" means that noise occurring during certain sensitive time periods (i.e., evening and early morning hours) is weighted more heavily in calculations. This time-weighted scale adds a 10 dBA "penalty" to nighttime noise levels (10 PM to 7 AM) to account for the greater sensitivity of people to noise during the night.[2] The predominant rating scale now in use throughout California for land use compatibility assessment is the CNEL scale, which represents a time weighted 24-hour average noise level. CNEL accounts for noise source, distance, single event duration, single event occurrence frequency, and time of day. CNEL has the same 10 dBA penalty for noise occurring between 10 PM and 7 AM as L_{dn}, but also adds a 5 dBA penalty for the evening time period (7 PM to 10 PM).

The human response to noise is subjective and varies considerably from individual to individual. The effects of noise can range from interference with sleep, concentration, and communication, to the causation of physiological and psychological stress, and at the higher intensity levels, to hearing loss. Noise can be referred to as its origin from a point source (e.g., an airplane) or it can be described in terms of a noise environment (e.g., a concert hall). Examples of noise levels measured on the A-weighted decibel scale are provided in Table 4.5.1-1.

TABLE 4.5.1-1
Typical Noise Levels

Noise Source/Environment	Noise Source (dBA)
Military Jet Take-Off at 50 feet	130
Rock Music Concert	111
Jet Flyover at 1000 feet	103
Motorcycle at 25 feet	90
Diesel Train, 45 mph at 100 feet	83
High Urban Ambient Sound	80
Freeway at 50 feet from Pavement Edge	76
Conversation	60
Average Office	50
Lower Limit, Urban Ambient Sound	40

SOURCE: City of Los Angeles, Outdoor Noise in the Metropolitan Environment, 1970.

Regulatory Background

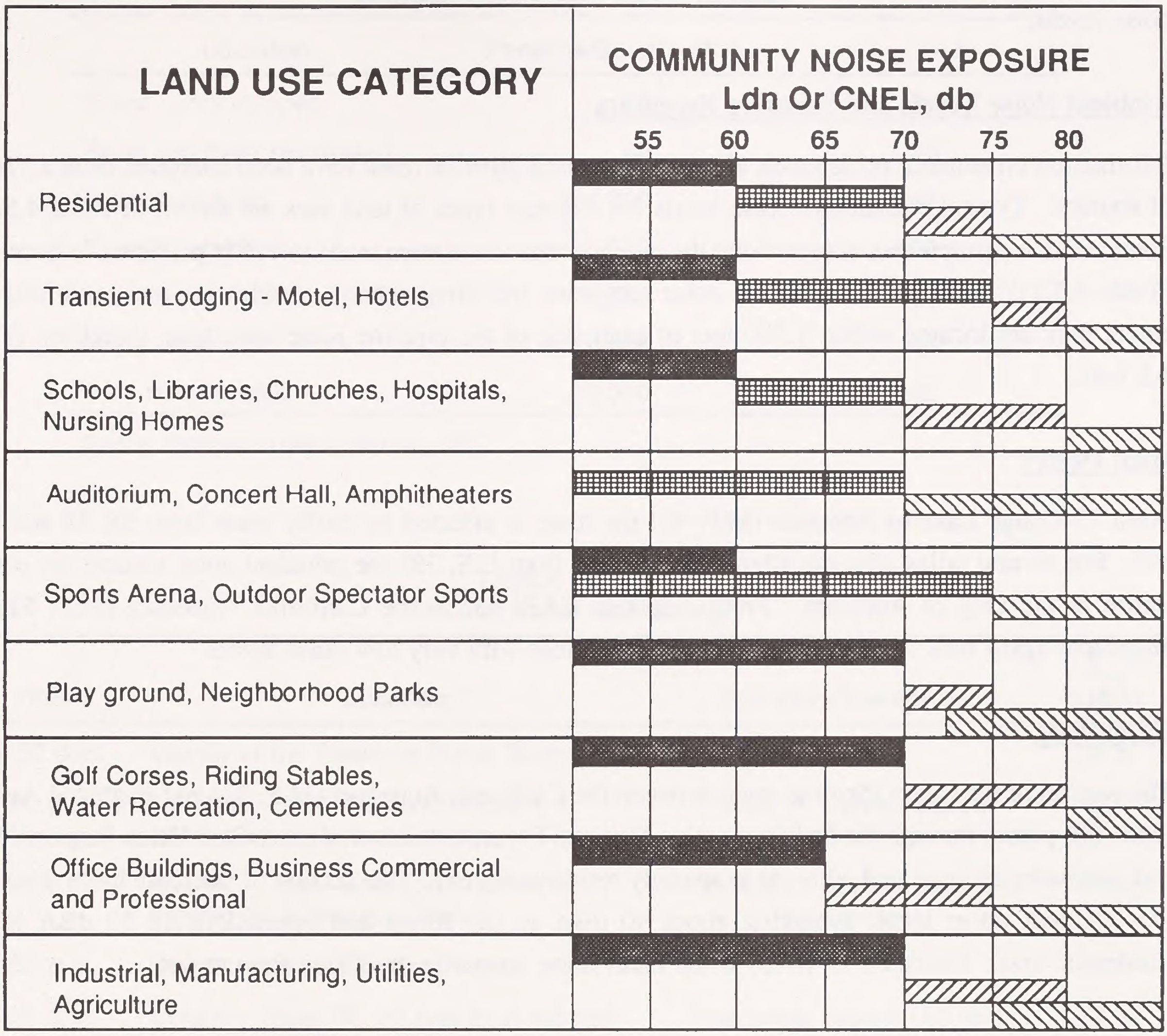
Neither the federal government nor the State of California has specific regulations for community noise that are directly applicable to the proposed Cajon Pipeline. However, as set forth in California Government Code Section 65302(g), the state requires that counties and cities prepare Noise Elements as part of their mandated General Plans.

The California Department of Health Services (DHS) Office of Noise Control provides guidelines for acceptable noise levels within specified land uses (Figure 4.5.1-1). When adopting a Noise Element, local jurisdictions are urged to customize their Element to fit their environment, but are also required to recognize these DHS guidelines. Hence, Noise Elements for areas within Los Angeles and San Bernardino counties are generally very similar to these State guidelines.

As shown in Figure 4.5.1-1, noise in the "normally acceptable" range places no undue burden on affected receptors and would need no mitigation. As noise rises into the "conditionally acceptable" range, some mitigation of exposure, as established by an acoustic study, may be warranted. At the next level, noise intrusion is so severe that it is classified "normally unacceptable" and would require mitigation measures to avoid disruption. Finally, noise in the"clearly unacceptable" range is so loud that it cannot be mitigated.

Land Use Compatibility for Community Noise Environments

Figure 4.5.1-1



▩ **NORMALLY ACCEPTABLE**
Specified land use is satisfactory, based upon the assumption that any buildings involved area of normal conventional construction, without any special noise isulation requirements.

▦ **CONDITIONALLY ACCEPTABLE**
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.

▨ **NORMALLY UNACCEPTABLE**
New construction of development should be discourage. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.

▧ **CLEARLY UNACCEPTABLE**
New construction or development clearly should not be undertaken.

Step 12
A major objective of the noise element is to utilize this information to insure compatible land use planning:
The noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise. (Government Code Section 65302(f))

SOURCE: State of California General Plan Guidelines, Office of Planning and Research June 1987

90439

For the most restrictive land use category, low density residential, the state sets the "normally acceptable" exterior noise level at 60 dBA (L_{dn} or CNEL). The state uses L_{dn} and CNEL interchangeably to measure noise levels.

Ambient Noise Levels and Sensitive Receptors

Information on ambient noise levels along the proposed pipeline route have been compiled from a variety of sources. Typical community noise levels for different types of land uses are shown in Table 4.5.1-2. Some noise measurements at sites along the pipeline route have been made to verify published information (Table 4.5.1-3). Potentially sensitive noise receptors, including schools, residential areas and hospitals where they are located within 1,500 feet of each side of the pipeline route have been identified (Table 4.5.1-4).

High Desert

From 12-Gauge Lake to Adelanto (M.P. 45) the route is affected by traffic noise from SR-58 and U.S. 395. For several miles after the alignment diverges from U.S. 395 the principal noise sources are distant traffic in the City of Adelanto. From Adelanto (M.P. 45) to the California Aqueduct (M.P. 52) the alignment again runs through sparsely developed areas with very low noise levels.

Cajon Pass

The section of the Cajon Pipeline route between the California Aqueduct (M.P. 52) and Highland Avenue (M.P. 80) passes through the San Bernardino National Forest, a residential area, Glen Helen Regional Park and undeveloped areas and adjacent to sparsely residential areas. This section of the route has a relatively low ambient noise level, averaging about 40 dBA in the forest and approximately 50 dBA in the residential area. Interstate 15 (I-15) is the main noise source in the Cajon Pass region.

Rancho Cucamonga to Carson

Between Fontana (M.P. 80) and Carson (M.P. 142), the Cajon Pipeline route crosses through the urban areas of Ontario, Montclair, Pomona, City of Industry, South El Monte, Montebello, Pico Rivera, Downey, South Gate, Paramount, Compton, Long Beach and Carson. Freeways, major arterials, railroads, aircraft, and industrial and population noise amount to high ambient noise levels ranging from 55 to 75 dBA. The major contributors to these high noise levels include: the Ontario International Airport, I-15, I-10, I-71, I-57, I-60, I-605, I-710, I-91 and I-4405.

TABLE 4.5.1-2
Average Community Noise Levels

Location	Persons/Square Mile	L_{dn}(dBA)
Rural - undeveloped	20	35
Rural - partially developed	60	40
Quiet suburban	200	45
Normal suburban	600	50
Urban	2,000	55
Noisy urban	6,000	60
Very noisy urban	20,000	65

Source: National Research Council, 1977.

TABLE 4.5.1-3
On-Site Noise Monitoring

Time	Location	Sensitive Receptors	L_{eq} (dBA)
12:52 p.m.	Vicinity of the Adelanto Pump Station	-	58.5
1:40 p.m.	Adelanto - near Raccoon/Crippen, in parking lot of Bender School	Harold H. Bender School (elementary)	42.0
2:05 p.m.[1]	Adelanto - near Raccoon/Crippen, in parking lot of Bender School	Harold H. Bender School (elementary)	61.0
2:50 p.m.	San Bernardino National Forest	-	41.7
4:30 p.m.	Ontario - State St., 50 feet from railroad tracks, 50 feet from single family residential	Residential (about 100 feet from railroad)	67.4
5:00 p.m.	Montclair - Mills Ave. near State St., 100 feet from railroad tracks	Residential (about 400 feet from railroad)	67.5
3:40 p.m.	Pomona - Mobile Home Park, 200 feet from Pomona Freeway/Valley Blvd.	Lanterman State Hospital, mobile home parks	53.3
4:26 p.m.	Montebello, Rancho/San Angelo	Residential	59.2
4:46 p.m.	Los Angeles County, Durfee Ave./Santa Anita Ave.	Whittier Narrows Nature Center, Wildlife Sanctuary	61.2

Source: EIP Associates

[1] School is dismissed (2:00 p.m.) and Air Force jet maneuvers begin which then dominate the noise environment.

TABLE 4.5.1-4
Location Of Sensitive Noise Receptors

Location	Receptor	Distance to Construction (feet)	Estimated Ambient Noise Level (dBA)	Estimated Noise Level During Construction (dBA)
M.P. 40-50				
Adelanto	Residential	50	55	85
	Bender Elementary School (Raccoon/Crippen)	50	55	85
San Bernardino County	Residential	50	55	85
	Bender Elementary School (Avenal/Baldy Mesa)	50	55	85
M.P. 50-60				
San Bernardino County	San Bernardino National Forest	0	40	89
M.P. 60-70				
San Bernardino County	Residential	1,000	50	60
M.P. 70-80				
San Bernardino County	Glen Helen Regional Park	500	45	66
M.P. 80-90				
Rancho Cucamonga	Etiwanda High School	1,000	60 - 65	66
Rancho Cucamonga	Etiwanda Intermediate School	1,800	55	61
M.P. 90-100				
Ontario	Residential	100	60 - 75	81
Ontario	Bon View Park	1,500	70	70
Ontario	Unity Park	1,000	60	63
Ontario	Trailer Park	1,000	60	63
Pomona	Trailer Park	1,000	60	63
Pomona	Residential	50	60	85
Pomona	Garfield Park	1,500	60	62
M.P. 100-110				
Pomona	Central Park	750	55 - 60	64
Pomona	Catholic Girls School	1,500	65	65
Pomona	Trailer Park	300	60	70

TABLE 4.5.1-4
Location Of Sensitive Noise Receptors

Location	Receptor	Distance to Construction (feet)	Estimated Ambient Noise Level (dBA)	Estimated Noise Level During Construction (dBA)
Pomona	St. Josephs High School	500	60	66
Pomona	Elmwood Elementary School	1,300	60	62
Pomona	Hamilton Park	200	60	73
Pomona	Continuation Schools	500	60 - 65	66
Pomona	Frank D. Lanterman State Hospital and Development Center	1,500	65	74
Diamond Bar	Little League Field and Park	1,000	55	85
City of Industry	Walnut School	800	60	64
West Covina	Trailer Park	1,000	60 - 65	68
M.P. 110-120				
Los Angeles County	Rorimer Elementary	1,000	60	63
Los Angeles County	Yorbita Elementary	1,500	55	58
La Puente	Residential	1,000	60	63
La Puente	Hurley Elementary	1,000	60	62
City of Industry	El Encanto Sanitarium	500	60 - 69	69
City of Industry	Valley Vocational Center	500	65	65
City of Industry	Trailer Park	200	70	76
Los Angeles County	Continuation High School	100	65	67
City of Industry	California Country Club	400	60	68
South El Monte	New Temple Elementary School	2,000	60	68
M.P. 120-130				
El Monte	Kranz Junio High School	1,250	65	67
Los Angeles County	Whittier Narrows Recreational Area	50	55	85
Pico Rivera	Residential	400	50	67
Pico Rivera	Pio Pico School	1,500	50	61
Montebello	Grant Area Park	100	50	68
Montebello	Reggi Rodriguez Park	1,000	55	60

TABLE 4.5.1-4
Location Of Sensitive Noise Receptors

Location	Receptor	Distance to Construction (feet)	Estimated Ambient Noise Level (dBA)	Estimated Noise Level During Construction (dBA)
Montebello	Residential	500	55	68
Pico Rivera	Rio Hondo Park	200	55	73
Pico Rivera	Montebello Gardens School	1,500	55	58
Montebello	St. Vincent's Seminary	1,000	50	60
Downey	Residential	200	55	73
M.P. 130-142				
Downey	Rio Hondo Country Club	50	55	85
Downey	Treasure Island Park	100	55	79
Downey	Crawford Park	100	55	79
Bell Gardens	Suva Street School	1,500	60	62
Bell Gardens	John A. Ford Park	200	55	73
South Gate	Residential	500	55	66
Downey	Los Padrinos Juvenile Hall	1,000	55	60
Southgate	Hollydale Park	50	60	85
Southgate	Hollydale School	1,000	60	63
Lynwood	Will Rogers School	1,000	55	61
Paramount	Keppel School	1,500	55	57
Paramount	Residential	300	60	70
Paramount	Banana Park	50	60	85
Compton	Dominguez High School	500	60	63
Compton	Par 3 Golf Course	50	60	85
Compton	Trailer Park	1,500	60	62
Compton	Residential	300	60	70
Long Beach	Residential	300	60	70
Long Beach	Sutter School	500	60	62
Long Beach	Union School	500	60	62
Carson	Residences	200	60	73

Source: EIP Associates

4.5.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative route runs directly south from 12-Gauge Lake for 1.5 miles and then southwest to U.S. 395 until it joins the proposed route at M.P. 25. For the 13 mile segment it is distant from SR-58 and U.S. 395 travelling through undeveloped desert land. For the remainder of the route to M.P. 142, the noise environment is as described in Section 4.5.1.

4.5.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative crosses to the south side of I-15 at approximately M.P. 73, into the property of the Glen Helen Regional Park. It parallels an existing utility corridor till it rejoins the proposed route at M.P. 74. The noise environment is as described for the proposed route in Section 4.5.1.

4.5.4 M-70 PIPELINE

The information in this section is summarized from the Draft Environmental Impact Report Statement on the proposed M-70 Pipeline replacement and optimization project.

The northern portion of the M-70 Pipeline route is in a rural environment where the existing noise levels are generally low. Following the pipeline to the south, past the Angeles National Forest toward the City of Los Angeles, the environment turns urban, where, in addition to noise from major streets and freeways, other sources of noise increase ambient noise levels.

Sensitive Receptors

Noise impacts on sensitive receptors can be estimated based on their distances from roadways and construction activities. For the purpose of estimating maximum increases in noise due to pipeline construction activities, each non-residential sensitive receptor was located on the proposed pipeline maps. Table 4.5.5-1 identifies the probable worst-case non-residential sensitive noise receptors for this route.

TABLE 4.5.6-1
Location of Noise Sensitive Receptors Along the M-70 Pipeline Route

Receptor	Milepost	Distance to Construction (ft)	Noise Level (dBA) Ambient	Noise Level (dBA) During Construction
Gorman School	7	400	71.8	76.0
J.F. Kennedy High School	55	450	63.5	73.4
Veteran's Hospital	57	900	63.6	68.6
Los Angeles Baptist School	45	450	70.0	74.1
Sanitarium & Hospital	63	300	77.8	80.2
California School	64	200	74.7	81.1
Charrock Road School	76	150	77.8	83.8
Hudson School	45	200	73.2	80.8
Hawthorne School	85	200	73.2	80.8
Trinity School	85	200	75.7	81.4
Will Rogers School	88	400	73.7	76.9
Perry School	90	200	77.7	82.0

4.5.5 PACIFIC PIPELINE

The information in this section is summarized from the proponent's Environmental Assessment for the Proposed Pacific Pipeline project.

The major noise sources in the vicinity of the Pacific Pipeline route are transportation facilities: major streets and highways, airports, and the railroad. Where the pipeline route is on or near a major roadway, traffic noise is almost invariably the dominant noise source affecting existing ambient noise levels. This is true in the rural sections of the study region, as well as in more intensely developed urban areas where there may be other activities contributing to background noise levels.

Sensitive Receptors

Sensitive receptors have been identified and tabulated for the Pacific Pipeline in Table 4.5.6-1. They have been divided into two categories: "frontage" receptors and "fringe" receptors. Frontage receptors are those located on parcels of land adjoining the proposed pipeline right-of-way (ROW)—most commonly either the Southern Pacific Railroad ROW or a public street. Fringe receptors are those located beyond the

TABLE 4.5.6-1
Location Of Noise Sensitive Receptors Along The Pacific Pipeline Route

Route Segment		Hospitals	School	Libraries	Churches	Parks
MP 0.0 TO MP 6.0	RFT		1			
Texaco Marine Terminal to Tajiguas	RFG					2
MP 6.0 to MP 12.0	RFT					
Tajiguas to El Capitan Beach State Park	RFG					2
MP 12.0 to MP 21.0	RFT		1			1
El Capitan Beach St. Pk. to Pedro Creek	RFG					1
MP 21.0 to MP 30.0	RFT		3		1 Cemetery	2
Pedro Creek to Highway 225	RFG	1	2			2
MP 30.0 to MP 40.5	RFT					3
Highway 225 to Monica Creek	RFG		1		1 Cemetery	1
MP 40.5 to MP 50.0	RFT		1			2
Monica Creek to just past Sea Cliff	RFG		2			1
MP 50.0 to MP 60.0	RFT					2
Past Sea Cliff to San Buenaventura Beach	RFG		2			1
MP 60.0 to MP 67.0	RFT				1 Cemetery	3
San Buenaventura Beach to Saticoy Ave.	RFG		2			1
MP 67.0 to MP 75.5	RFT		3			
Saticoy Avenue to Santa Paula Creek	RFG		5			
MP 75.5 to MP 84.5	RFT					1
Santa Paula Creek to Fillmore Street	RFG		1			
MP 84.5 to MP 94.5	RFT					1
Fillmore Street to Camulos	RFG					
MP 94.5 to MP 104.0	RFT					1
Camulos to Newhall Ranch	RFG					
MP 104.0 to MP 114.5	RFT					1
Newhall Ranch to Antelope Valley Freeway	RFG					
MP 114.5 to MP 121.5	RFT					1
Antelope Valley Freeway to Van Nuys Blvd.	RFG		3			2

TABLE 4.5.6-1
Location Of Noise Sensitive Receptors Along The Pacific Pipeline Route

Route Segment		Hospitals	School	Libraries	Churches	Parks
MP 121.5 to MP 128.0	RFT					
Van Nuys Blvd. to Buena Vista Street	RFG	1	1			
MP 128.0 to MP 134.0	RFT					
Buena Vista Street to Colorado Street	RFG	1	2			
MP 134.0 to MP 139.5	RFT					
Colorado Street to Broadway	RFG	3				
MP 139.5 to MP 147.5	RFT					
Broadway to Firestone Blvd.	RFG		3			1
MP 147.5 to MP 151.5	RFT					
Firestone Blvd. to Rosecrans Avenue	RFG		6			

1) RFT (Route Frontage) - Land uses on parcels that abut the pipeline right of way.

2) RFG (Route Fringe) - Land uses beyond the route uses but within 1,000 feet of the pipeline right of way. Where route fringe use parcels extend to 1,000 feet or more, they are tabulated under the Route Frontage category only.

frontage receptors but within 1,000 feet of the proposed pipeline ROW. In addition, sensitive receptors were identified within 1 mile of the Keith, Gaviota, and Las Flores pump station locations.

A total of 108 sensitive receptors have been identified along the proposed route, including 32 in route frontage locations and 76 in route fringe locations. Eighty-seven percent of the individual receptors are either schools or parks. Fifty-eight of the 108 receptors are schools (all but 10 of which are in fringe locations), and 36 are parks (19 of which front on the ROW). In addition to the individual receptors identified, there are a substantial number of residences within 1,000 feet of the ROW that are also considered noise sensitive.

In addition to the sensitive receptors within 1,000 feet of the pipeline, receptors in the area around the proposed Keigh Pump Station were identified. Three residential areas and a park are within approximately 2,850 feet of the pump station site. The nearest residence is located 1,650 feet from the pipeline. A mobile home park and a small cluster of homes are located from 1,750 to 2,850 feet from the site. The nearest point of Kenney Grove Park is about 2,500 feet from the proposed station location.

4.5.6 FOUR CORNERS PIPELINE

The Four Corners Line 90 Pipeline is an existing pipeline from Cadiz, San Bernardino County to Los Angeles. Approximately 40 miles (22 percent) of the route crosses urbanized areas and is located within 1,500 feet of sensitive receptors, such as parks, schools, etc. The remainder of the route is within undeveloped land, forest lands, and open space.

ENDNOTES

1. EIR Manual for Private Projects, City of Los Angeles, August 1975, p. N10.

2. Ibid., p. N2.

4.6 VISUAL RESOURCES

4.6.1 CAJON PIPELINE

There are two crude oil facilities proposed for the Cajon Pipeline project. The first, referred to as the Cajon Terminal, would serve as the initiation point for the pipeline, and would be located on a site 27 miles west of Barstow. The second terminal, referred to as the Adelanto Pump Station, would be located 32 miles to the south in the City of Adelanto. The pipeline route would cover a total of 142 miles from the Cajon Terminal to the City of Carson in south Los Angeles County. The pipeline would be almost exclusively underground in existing roadways, and in utility and flood control rights-of-way.

Applicable Plans and Policies

The Cajon Pipeline route passes through several different jurisdictions, however visually sensitive areas primarily fall within U.S. Forest Service (USFS) and Bureau of Land Management (BLM) lands within the northern 58 miles of the route. The primary document governing land use within the USFS area potentially affected by the project is the San Bernardino National Forest Land and Resource Management Plan. The plan promotes the maintenance of established visual quality objectives for all management activities occurring in the National Forest. The policy document addressing visual resources within BLM lands potentially affected by the project is the California Desert Conservation Area Plan (CDCAP) of 1980. Both the USFS and BLM Plans set standards and criteria for determining and mitigating visual resource impacts within their respective jurisdictions.

Methodology

Bureau of Land Management (BLM)

The northern portions of the pipeline route are located within the BLM's California Desert Conservation Area (CDCA). Lands within the CDCA are designated geographically into four Multiple-Use Classes. These classifications are based on the sensitivity of resources to types of uses for each geographic area. The classifications and their general guidelines are summarized below.

> *Multiple-Use Class C* - Areas which are being "preliminarily recommended" as suitable for wilderness designation by Congress, which are intended in the future to show that formal designation.
>
> *Multiple-Use Class L* - Designates "limited use". These areas are intended to protect sensitive, natural, scenic, ecological, and cultural resource values. They are managed to provide for generally lower-intensity, carefully controlled multiple-use of resources, while ensuring sensitive values are not significantly diminished.

> Multiple-Use Class M - Designates "moderate use", based on a controlled balance between higher intensity use and protection of public lands. Provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and utility development. Class M is also designated to conserve desert resources and to mitigate damage which permitted uses may cause.
>
> *Multiple-Use Class I* - Designates "intensive use", allowing for concentrated use of lands and resources to meet human needs. Reasonable protection is provided for sensitive natural and cultural values. Mitigation of impacts on resources and rehabilitation of impacted areas will occur to the degree feasible.

Proposed activities that may influence visual resources within BLM lands are typically assessed by using the Bureau's contrast rating system. The contrast rating system is a tool used to determine the extent of visual impacts that proposed resource management activities would create in a landscape, with the basic assumption that the degree of visual impact is proportional to the contrast between the project and the existing landscape. Contrast is measured through consideration of major features in the landscape, and design elements of the project as they relate to form, line, color and texture. The system serves as a guide for reducing visual impacts to acceptable levels as defined by the BLM's multiple-use class guidelines.

U.S. Forest Service (USFS)

In addition to the BLM classification and contrast rating system, the USFS also has standards for determining existing visual conditions, project impacts, and appropriate mitigation measures. The USFS Visual Resource Management System (VRMS) is used on Forest Service lands to manage visual resources and preserve scenic quality. The system has two essential components, an inventory of existing visual conditions (EVC) and related visual quality objectives (VQO). Existing visual conditions are determined through field work with the outcome providing visual character classifications for the landscapes being evaluated (i.e. pristine, natural appearing, highly disturbed). Each EVC classification has visual quality objectives pertaining to how the landscape should look based on established levels of acceptable alteration to the landscape.

The existing visual conditions categories established by the USFS take into account visual character and variety class, visual sensitivity, and distance zones. These categories are described below:

Visual Character and Variety Class

The principle elements that give an area its visual character are natural landform, vegetative patterns, water features, and existing man-made modifications to the landscape. The Forest Service VRMS has established three visual character variety classifications for various types of landscape diversity.

Class A - *Distinctive*

Landscape features are highly varied and distinctive providing unusual or outstanding visual quality.

Class B - *Common*

Landscape features are moderately varied and contain variety in form, line, color, and texture or a combination thereof, but intend to be common throughout the character type. These areas are not considered outstanding in visual quality.

Class C - *Minimal*

Landscape features are only slightly varied; patterns tend to be of low contrast and are not discernible. Overall, the landscape appears to be homogeneous. Class C areas include all areas not found under Class A or B.

Visual Sensitivity

The visual sensitivity of a resource measures the degree of public interest in the resource, and concerns over changes in the quality of that resource. The degree of sensitivity is evaluated based on frequency of views, type of viewer (stationary or mobile), and the distance from which project-related features can be seen. USFS definitions for areas of high, moderate, and low sensitivity are summarized below.

High Sensitivity

- areas viewed from primary travel routes, use areas and water bodies with moderate to high volumes of use throughout much of the year, and where visual quality is of major concern to users;

- areas providing regionally or locally rare recreational opportunities whose scenic character is natural in appearance;

- areas viewed from designated state scenic highways or local scenic routes.

Moderate Sensitivity

- areas viewed from primary travel routes, use areas and water bodies where visual quality is of minor concern to users;

- areas viewed from secondary travel routes or areas where visual quality is of major concern to users;

Low Sensitivity

- areas viewed from secondary travel routes or areas where visual quality is of minor concern to users.

Distance Zones

The distance from which visual alteration can be seen is an essential component in determining the significance of impacts on visual resources. Three distance zones are used in the VRMS. The distance zones are summarized as follows:

Foreground -	Areas typically within 0.25 to 0.5 miles of the observer where details are discernable.
Middleground -	0.5 to 5.0 miles from the observer. This zone is particularly important due to the large area visible where moderate detail can still be perceived.
Background -	From 5.0 miles to the horizon where details are not perceived and color, shape, and texture are more significant.

The Forest Service VRMS methodology combines the components discussed above to establish existing visual conditions which are subject to visual quality objectives. These objectives are used in managing visual resources within USFS lands. Visual Resource Management Guidelines are presented in Table 4.6.1-1.

TABLE 4.6.1-1
Visual Resource Management Guidelines

Existing Visual Condition	Visual Quality Objective	Explanation
I = Pristine	P = Preservation	Ecological changes only.
II = Natural Appearing	R = Retention	Changes are not evident.
III = Slightly Modified	PR = Partial Retention	Changes are noticed, but do not attract attention.
IV = Modified	M = Modification	Changes are easily noticed and attract attention.
V = Greatly Modified	MM = Maximum Modification	Changes are very strong and attract attention.
VI = Drastically Disturbed	UM = Unacceptable Modification	Changes are in glaring contrast and disharmony with natural patterns

Source: USDA, 1987.

Existing Visual Resources

High Desert

The Cajon Pipeline route begins at Cajon Terminal. The 25-acre site proposed for the terminal is located in the high desert 27 miles west of Barstow at an elevation of 2,290 feet. State Route 58 (SR-58) is located adjacent to the site 700 feet to the north, and U.S. Route 395 (U.S. 395) is approximately 12 miles to the east. The site is visually prominent and can be seen from SR-58. The terminal would be constructed adjacent to the All-American Pipeline's (AAPL) 12-Gauge Lake heater station shown in Photo A (Figure 4.6.1-1).

The first 54 miles of the route primarily cross high desert lands that are characteristically flat and sparsely covered with desert scrub vegetation (Photo B - Figure 4.6.1-1). The portion of the route through the Kramer Hills, however, is visually prominent and can be viewed from U.S. 395 (Figure 4.6.1-2). With the exception of surface streets in and around the Adelanto area, the route exclusively follows existing dirt roads. The roads, which are primarily used by off-road vehicles, are typically not visible from adjacent highways due to the screening effects of foreground vegetation and the essentially flat lay of the land.

The 2.2-acre Adelanto Pump Station site at M.P. 45.4, is located in an industrialized area of the city out of view from residential developments and main arterials. The vacant site has no notable visual features and is not considered visually sensitive.

The major portions of the high desert route from M.P. 0 to the vicinity of M.P. 52, fall within the BLM CDCA. However, the majority of the route does not have a Multiple-Use Classification. These areas are designated in the CDCA map as "unclassified" and usually contain a large percentage of private, state, and other federally managed land. The Cajon Terminal is the only portion of the route with a BLM multiple-use classification. The area is designated Class M, "Moderate Use", which allows utility development and other moderate intensity uses subject to appropriate mitigation.

Overall, the high desert portion of the route apart from the Kramer Hills has little visible topographic variation, and desert scrub vegetation provides sparse and consistent coverage throughout. Due to the distance from primary travel routes and public gathering areas, this portion of the route is designated as having low visual sensitivity. Two important exceptions to this visual sensitivity rating are the Cajon Terminal site, which due to its proximity to and visibility from SR-58, is rated as having high visual sensitivity, and the portions of the route on the slopes of the Kramer Hills which is rated as having high visual sensitivity due to its proximity to U.S. 395.

Cajon Pass

The pipeline route as it approaches the summit of Cajon Pass from the north is approximately 2 miles west of U.S. 395 and out of view from motorists. Views of the route on the north side of the Pass are primarily from hikers and other forest users. As the route reaches the summit of Baldy Mesa (at an elevation of 4,603 feet and M.P. 59) and continues down its south facing slope, views become quite

Pipeline Route Photos

Figure 4.6.1-1

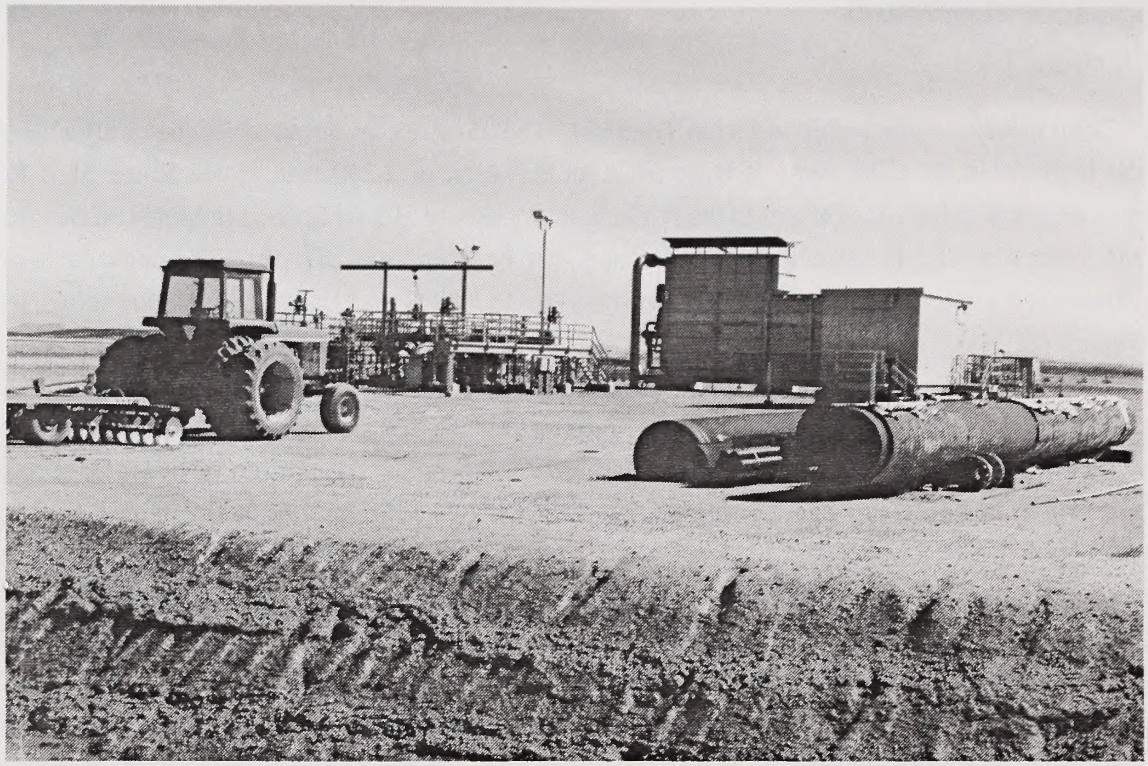


Photo A: View north to the AllAmerican Pipeline 12-Gage Heater Station. The proposed Cajon Terminal would be located immediately adjacent to the existing Heater Station.

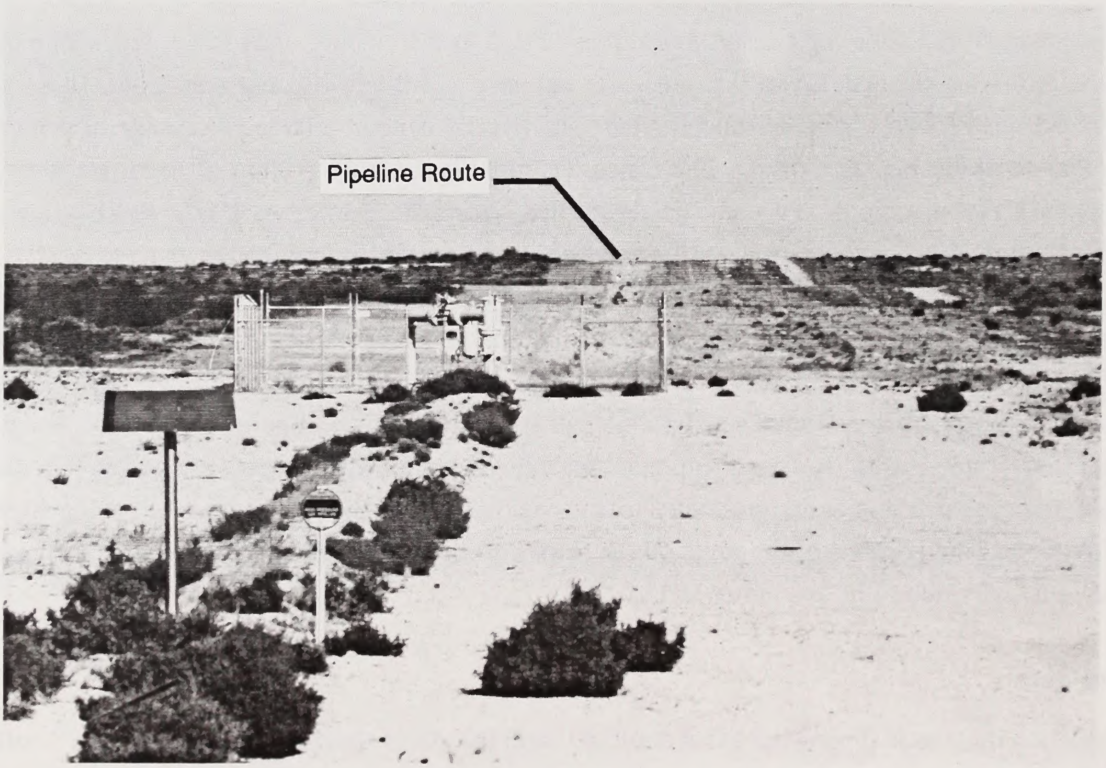


Photo B: "Typical" photo of the pipeline route through the high desert. Pipeline would be located under existing dirt roads throughout the majority of the high desert route.

Pipeline Route Photos

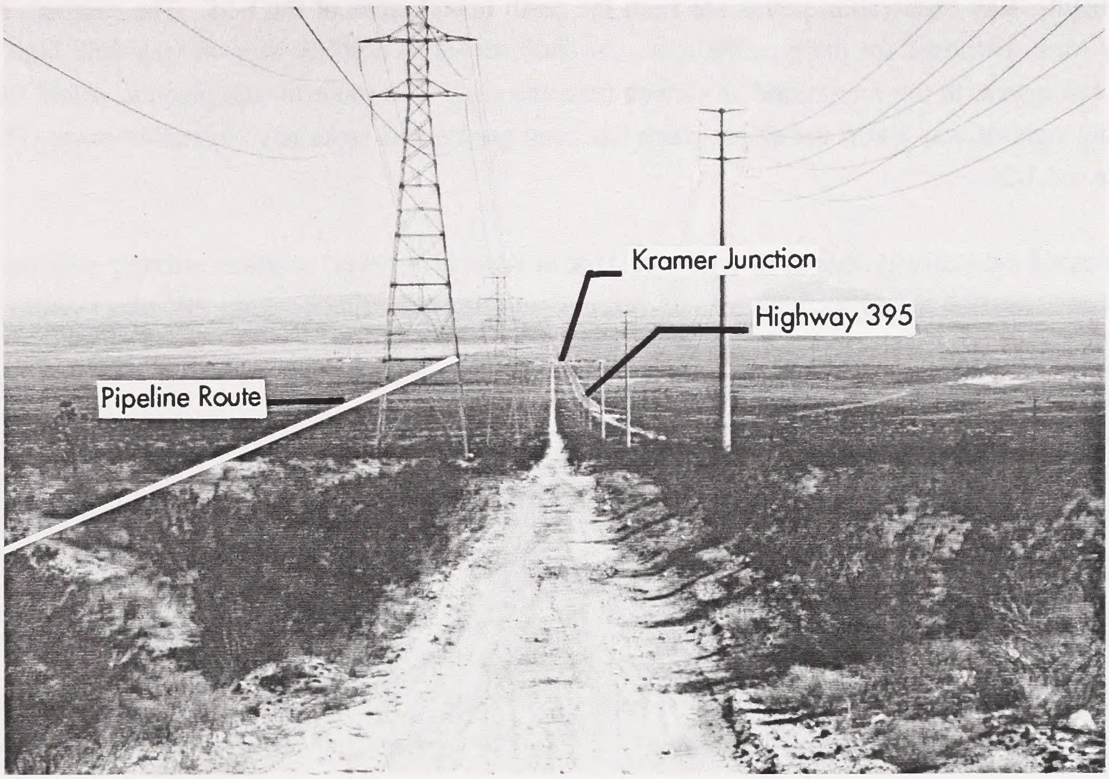


Photo C: View of the pipleline route looking north from Kramer Hills toward Kramer Junction.

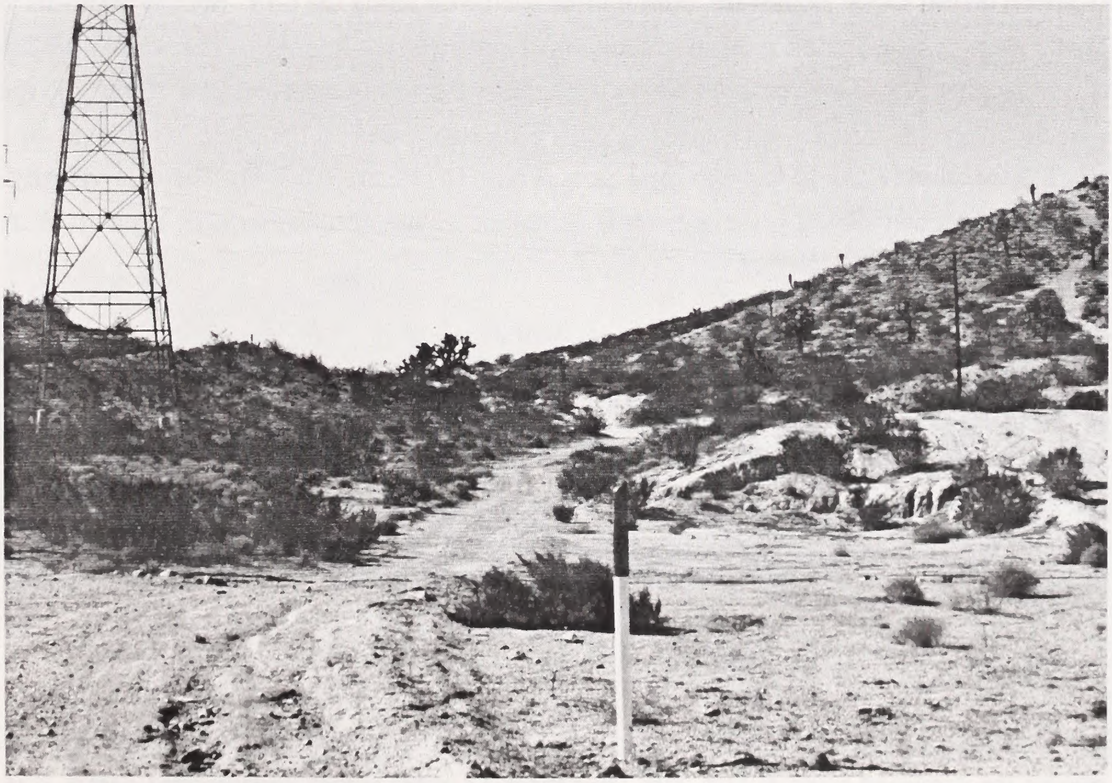


Photo D: View from the north of the pipeline route as it crosses the approximate mid-point of the southern slope of the Krammer Hills.

prominent. Key observation points are from the north bound lanes of the I-15. The southern slope of Baldy Mesa proposed for the pipeline route currently serves as a utility right-of-way with high tension lines and towers in the foreground as viewed from the east. The route for the pipeline would follow an existing right-of-way down the slope which has been graded and lacks any vegetative cover (Photo E - Figure 4.6.1-2).

The cleared right-of-way, due to its width and lack of vegetative cover, contrasts strongly with the natural landscape covering the adjacent slopes and is highly visible from middleground (3/4 mile) vantage points along the I-15 (Photo F - Figure 4.6.1-3).

Through the Cajon Pass the landscape is much more distinct than in the high desert areas due to the variation in topography. The chaparral plant community provides consistent coverage throughout most of the area with dirt roads and utility rights-of-way being minor exceptions. Due to these factors, the area is designated with a visual character variety classification of A, "Distinctive". Visual sensitivity, primarily for the south facing slope of Baldy Mesa, is considered "High" due the scenic character of the area and proximity to the I-15, which is a primary travel route. The USFS lands crossed by the pipeline route have a EVC rating of III, and a Visual Quality Objective designation of PR (Partial Retention). Lands within this designation can accommodate change but not that which would attract attention.

After its descent down the southern slope of Baldy Mesa, the route continues along the western base of Cajon Canyon on old Cajon Boulevard, until it turns southwest along the I-15. Shortly after this junction, the pipeline route crosses Lytle Creek and Cajon Wash alongside the highway. The washes are frequently scoured and lack any developed riparian plant community. Between Cajon and Lytle Creek the route rises above the highway on visually prominent slopes. The remainder of the route continuing to Fontana generally follows along the I-15 through rural areas (Photo G - Figure 4.6.1-4). The only visually distinct areas along this section of the route are where introduced plant species, such as eucalyptus trees, are concentrated alongside the highway.

Fontana To Carson

From Fontana (M.P. 80) to Carson (M.P. 142) the route passes through urbanized areas and agricultural lands in existing roadways or alongside flood control channels, or utility and railroad rights-of-way (Photo H & I - Figures 4.6.1-4 and 5). The only areas considered visually sensitive are in the Whittier Narrows area where vegetation, a nature preserve, and a park are located within the routes viewed. Within this area, the pipeline would be located within the road right-of-way.

4.6.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative runs directly south from 12-Gauge Lake for 1.5 miles and then southwest till it rejoins the proposed route at U.S. 395. For these 13 miles across undeveloped desert, it is distant from U.S. 395 and SR-58 and not visible. For the remainder of the route, the visual resources are as described for the proposed route.

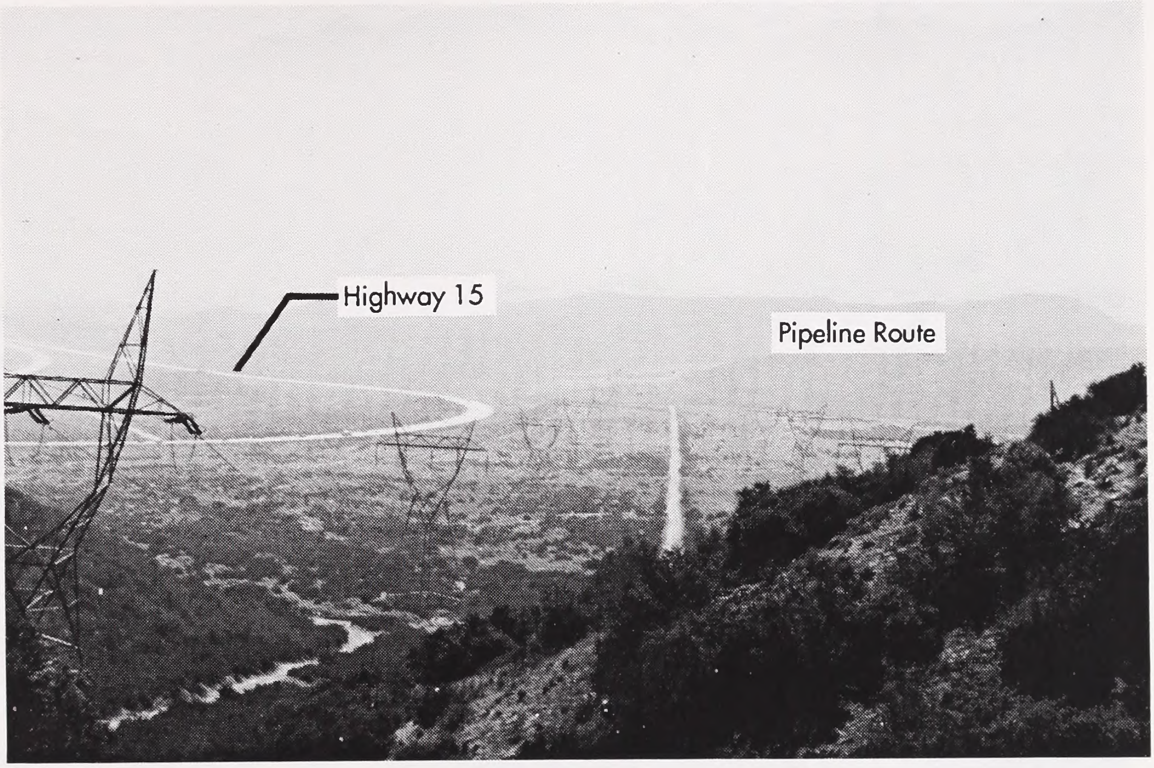


Photo E: View south near the summit of Cajon Pass. The pipeline route runs down the face of the slope on the right and continues south between the high tension lines. Highway 15 can be clearly seen to the east.

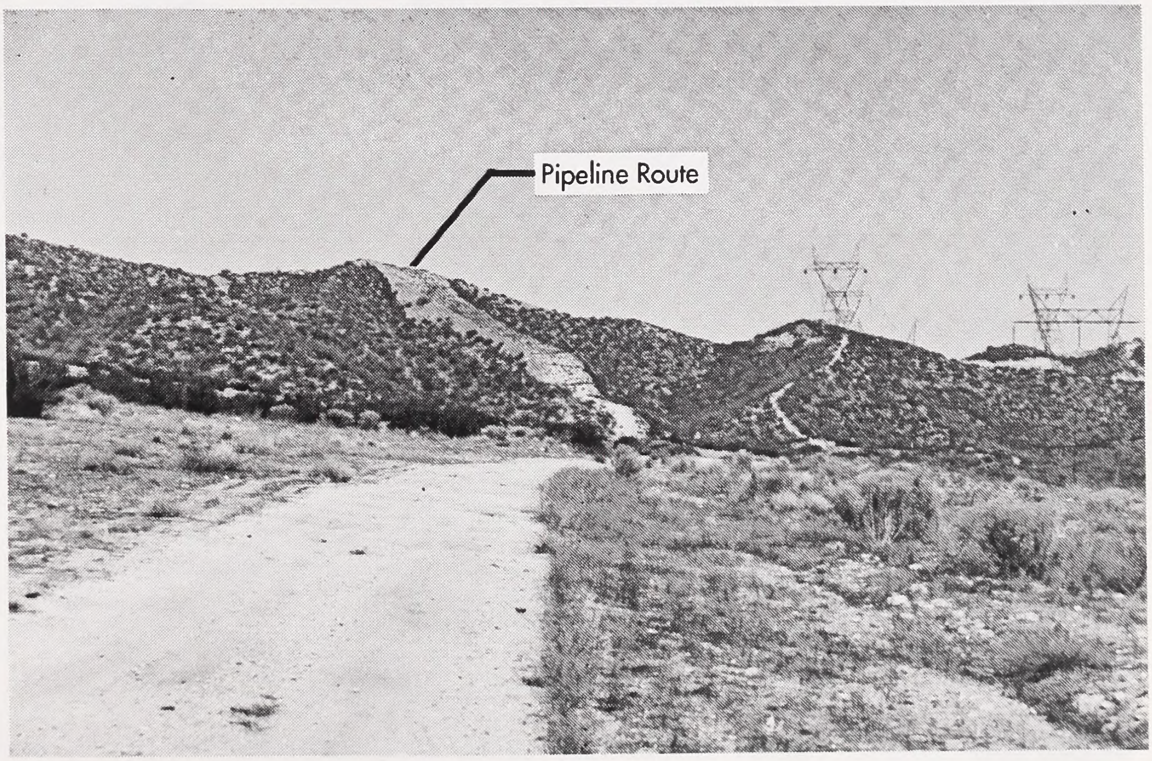


Photo F: View north toward the summit of Cajon Pass shows the routes descent down the pass that was not visable in the previous photo.

Photo G: "Typical" photo of the pipeline route from Highway 15 in the vicinity of Mile Post 65.

Photo H: View south along pipeline route from Grand Avenue in the City of Industry. Route is along the south side of the railroad tracks.

Pipeline Route Photos

Figure 4.6.1-5

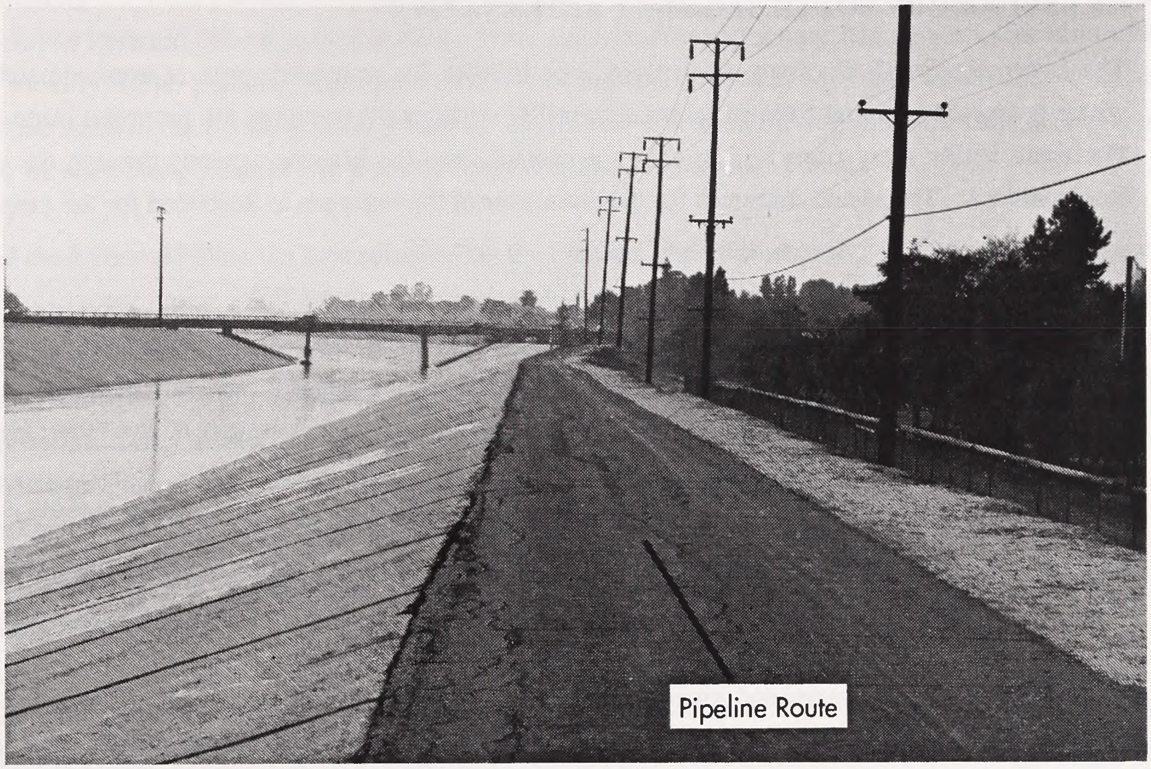


Photo I: "Typical" flood control channel route. View is taken along the Rio Hondo Flood Control Channel looking south from a location just south of the Whittier Narrows Dam.

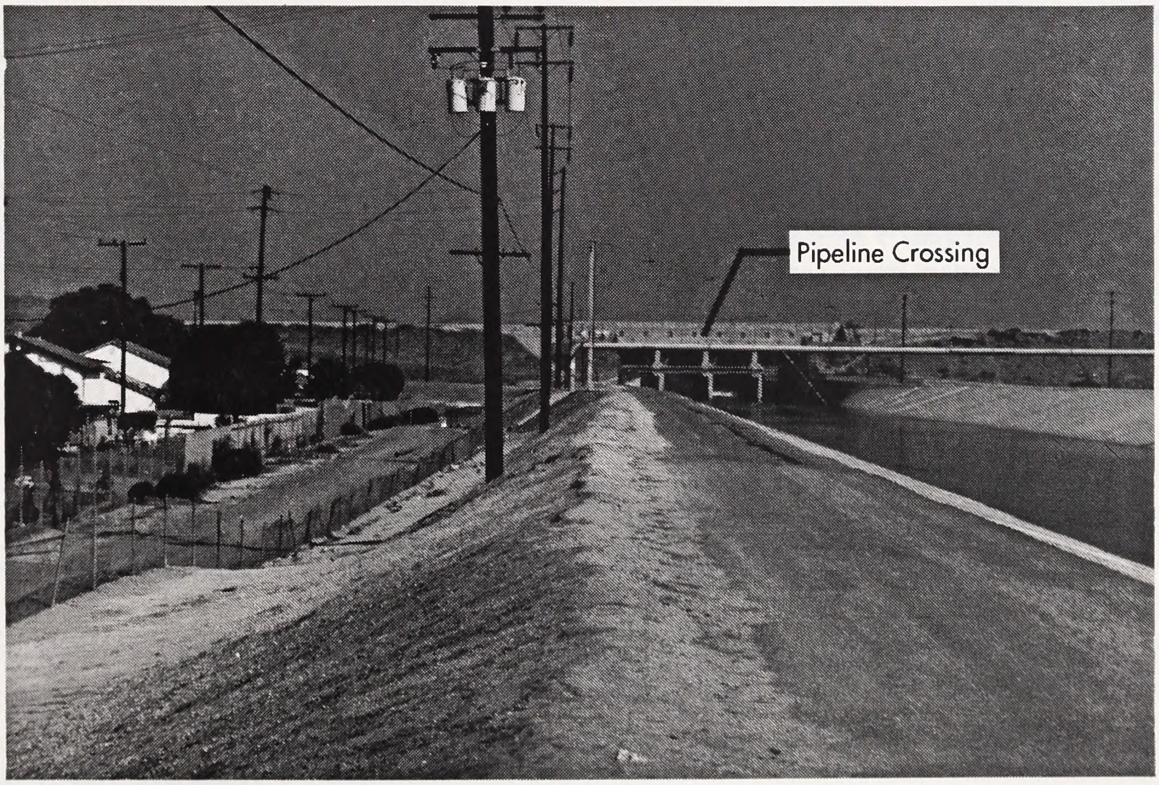


Photo J: Photo shows a pipeline crossing of the type that would be used for the Cajon Pipeline.

4.6.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative departs from the proposed route at approximately M.P. 73 where it crosses I-15 and follows an existing utility corridor till it rejoins the proposed route at M.P. 74. The route bends away from I-15 and though distant from the highway, passes through the Glen Helen Regional Park. The visual resources for the remainder of the route are as described for the proposed route.

4.6.4 M-70 PIPELINE

The information in this section is summarized from the Draft Environmental Impact Report Statement on the proposed M-70 Pipeline replacement and optimization project. The proposed pipeline route transects approximately 90 miles of aesthetically diverse lands. The area from Mobil's Lebec station to M.P. 8 is primarily rural in nature. Short grass covered rolling hillsides and densely brush vegetated drainages provide a scenic backdrop to the small towns of Lebec and Gorman along the I-5. This portion of the pipeline route is considered to have a variety classification of type B, to be moderately sensitive and able to be viewed by motorists along Interstate 5 and Lebec Road, and by residents of Lebec and Gorman.

As the pipeline route nears and enters the Angeles National Forest, the landscape is more natural in appearance, characterized by steep rugged mountains and ravines, with vegetation ranging from mixed chaparral to thick oak woodlands. Seasonal streams feed the man-made reservoir and recreational area of Pyramid Lake (M.P. 18 on Map 5). The pipeline route does not cross any visually pristine areas.

However, approximately 9.4 miles of the pipeline corridor is routed within areas of natural appearance. The Forest Service has established a management policy of retention for such areas, where any changes should not be noticed. The topography and scenic beauty of the area give this portion of the route a variety classification of Class A, with high sensitivity. The route can be viewed by recreationalists enjoying the Pyramid Lake recreation site and motorists along Old Highway 99 and the I-5. Old Highway 99 is a secondary travel corridor where the route is primarily in the foreground (under the road surface in most cases). Middle distance viewers would include motorists on the primary travel corridor of the I-5. In those areas where the pipeline route leaves paved roadways, use and access is generally limited. The following sections of the pipeline route are also located within the middleground distance zone:

Approximate Mileposts	Description of Area
MP 16.5 - 20.5	East of Pyramid Lake, Angeles National Forest
MP 28.2 - 33.0	Maple Canyon, between north and southbound lanes of 1-5, Los Angeles County

The remaining 5.1 miles through the National Forest land have been slightly to greatly modified, including the developed Pyramid Lake Recreation Area. Substantial modifications have been made in the immediate project vicinity. The pipeline route in this area follows Old Highway 99 from which the north and southbound lanes of the I-5 are generally visible. Steel tower electrical transmission lines and access roads can also be seen along most of the pipeline route through the National Forest.

South of the National Forest the area surrounding the pipeline route becomes increasingly more urbanized. Variations in topographic relief are much less dramatic than that in the north. Landscape diversity ranges from common (Class B) in the rural areas to minimal (Class C) in urban areas. Most of the proposed route is located within the foreground distance zones, in the immediate view of travelers along the roadways under which it would be installed.

4.6.5 PACIFIC PIPELINE

The information in this section is summarized from the proponent's Environmental Assessment for the Proposed Pacific Pipeline.

The visual resources seen from U.S. 101, including the Pacific Ocean, the Catalina Islands, the Santa Ynez Mountains, and the Coastal Plain, are significant scenic resources on a national level. Existing visual conditions along the northern portion of the proposed Pacific Pipeline route, from Gaviota to San Fernando, include open space, recreational parks and beaches, agricultural fields and orchards, and rural residential developments. The pipeline would stay within the ROW of the Southern Pacific Railroad, which is an existing modified landscape with a narrow, linear, transportation facility along most of this portion of the route. The existing vegetation is heavily modified within this ROW.

Visual resources along the southern portion of the proposed route, in Los Angeles County, are heavily modified from the natural landscape character and are predominantly industrial, commercial, recreational, and residential uses in an urban setting. Visual resources near both principal refinery destinations at Wilmington and El Segundo are heavily modified industrial landscapes.

4.6.6 FOUR CORNERS PIPELINE

The Four Corners Line 90 Pipeline is an existing pipeline which extends from Cadiz in San Bernardino County to Los Angeles. The pipeline is buried and is not visible for the majority of the route. The only existing surface indicators of the pipeline are existing pump stations.

The pipeline route transects approximately 140 miles of land, primarily open space and rural in character. Due to the distance from primary travel routes and public gathering areas, this portion of the route is designated as having a low visual sensitivity, apart from the portion of the route through the urbanized areas of Twenty-nine Palms.

Through the Morongo Valley, the landscape is much more distinct than in the high desert due to the variation in topography. Due to the scenic character of the area, the visual sensitivity is considered high. From west of Whitewater, the route passes through urbanized areas and agricultural lands in existing roadways or utility and railroad rights-of-way. The only areas that would be considered visually sensitive would be in the Santa Ana Mountains.

4.7 LAND USE

4.7.1 CAJON PIPELINE

This section presents the governing land use policies and the existing land use patterns along the proposed Cajon Pipeline route. It also identifies sensitive receptors (ie. schools, trailer parks, recreational parks, hospitals, etc.) within 1,500 feet of the pipeline, and special regulations required by jurisdictions. The inventory of existing land use is based on an examination of Thomas Guide street maps (Los Angeles/Orange Counties 1992 and San Bernardino County 1992), Thomas Guide aerial photographs (Los Angeles 1986), USGS maps, field reconnaissance, and contacts with appropriate jurisdictional authorities.

BLM Policies, Plans and Programs

Construction on BLM lands must conform to the policies in the California Desert Conservation Area Plan (CDCA Plan) (1980). The goal of the Desert Plan is to provide for the use of the public lands and resources of the California Desert Conservation Area, including economic, education, scientific, and recreational uses, in a manner which does not diminish the environmental, cultural, and aesthetic values of the desert and its future productivity. The goal is to be achieved through management actions and conflict resolution as described in guidelines for four designated geographic multiple-use classes (MUC). Each MUC describes a different type and level or degree of use which is permitted within that particular geographic area.

The classification and general guidelines are summarized below:

> Multiple-Use Class C: Designates areas which are being "preliminarily recommended" as suitable for wilderness designation by Congress. It will be used in the future for areas formally designated by Congress as wilderness.
>
> Multiple-Use Class L: Designates "limited use". These are to protect sensitive, natural, scenic, ecological, and cultural resource values. They are managed to provide for generally lower intensity, carefully controlled multiple-use of resources, while ensuring sensitive values are not significantly diminished.
>
> Multiple-Use Class M: Designates "moderate use", based on a controlled balance between higher intensity use and protection of public lands. Provide for a wide variety of present and future uses such as mini, livestock grazing, recreation, energy, and utility development. Class M is also intended to conserve desert resources and mitigate damage to those resources which permitted use may cause.

> Multiple-Use Class I: Designates "intensive use"' allowing for concentrated use of lands and resources to meet human needs. Reasonable protection is provided for sensitive natural and cultural values. Mitigation of impacts on resources and rehabilitation of impacted areas will occur to the degree feasible.

A major portion of the proposed pipeline route on BLM land does not have a multiple use classification and is designated as "unclassified". The Cajon Terminal area is the only area with a multiple-use classification (Class M). Under a Class M designation, new utility transmission facilities may be allowed only within designated corridors. The Cajon Pipeline project is consistent.

A more specific application of the MUC guidelines for a specific resource or activity about which the public has expressed significant concern is provided through various plan elements. Within the CDCA Plan are 12 elements, each providing a desert-wide perspective of the planning decisions for one major resource or issue, as well as providing specific application or interpretation of MUC guidelines. The task of the element is to identify existing and potential conflicts, and to resolve those conflicts.

The Energy Production and Utility Corridor Element of the Plan applies to utility-related issues. The element has established decision criteria which include the following:

1. Minimize the number of separate rights-of-way by utilizing existing rights-of-way as a basis for planning corridors;
2. Encourage joint use of corridors for transmission lines, canals, pipelines, and cables;
3. Provide alternative corridors to be considered during processing of applications;
4. Avoid sensitive resources wherever possible;
5. Conform to local plans whenever possible;
6. Consider wilderness values and be consistent with final wilderness recommendations;
7. Complete the delivery-systems network;
8. Consider ongoing projects for which decisions have been made;

This element has also identified utility planning corridors as a guide to planning and environmental assessment. The Cajon Pipeline route on BLM land is within the designated utility planning corridors.

Existing Land Uses

The proposed Cajon Pipeline traverses approximately 142 miles of undeveloped and developed land. The pipeline starts at the Cajon Terminal, which is adjacent to the All-American Pipeline (AAPL) at 12-Gauge Lake Heater Station. From the Cajon Terminal, the pipeline traverses through predominantly desert open space land and isolated low density residential land uses, to the Cajon Pass in the San Bernardino National Forest. Jurisdictions along this portion of the route include the U.S. Bureau of Land Management (BLM), San Bernardino County, and the cities of Adelanto and Victorville. The pipeline route continues south, through the Cajon Pass, which is under the jurisdiction of the U.S. Forest Service. The land use through this pass, though predominantly undeveloped open space and recreational land, contains a major utility and transportation corridor. South of the mountains, the pipeline enters the urbanized segment of the alignment. The remaining pipeline segment (Cajon Pass to the City of Carson) totals 63 miles. The route passes through the cities of Fontana, Rancho Cucamonga, Ontario, Montclair, Pomona, Industry, South El Monte, Montebello, Pico Rivera, Downey, South Gate, Paramount, Compton, Long Beach, Los Angeles and Carson. A major portion of the pipeline route parallels transportation lines (ie. highways and railroads) and flood control channel rights-of-way.

Along the 142 mile proposed route, the pipeline traverses San Bernardino and Los Angeles counties, 17 cities and various county, state and federal agency jurisdictions (Figure 4.7.1-1(A,B)). Each jurisdiction is identified below, and Table 4.7.1-1 presents a list of prominent land uses, sensitive receptors and relevant regulations.

Bureau of Land Management

The proposed Cajon Pipeline route traverses through approximately 25 miles of land under the jurisdiction of BLM. Most of the BLM land is located north of the City of Adelanto. One mile of BLM land is located in the Cajon Pass area. Existing land use along this segment of the pipeline is predominantly desert open space. There are no sensitive receptors in the BLM segment of the pipeline route.

San Bernardino County

County unincorporated land represents approximately 76 miles of the total 142 mile length of the pipeline. Portions of the pipeline parallel U.S. 395 (M.P. 25-37). The pipeline route passes through the westerly edge of George Air Force Base for approximately four miles. At M.P. 51, the pipeline crosses the California Aqueduct. Scattered residential properties and an elementary school at Avenal Street and Baldy Mesa Road at M.P. 53 are the only sensitive receptors along the pipeline route. The elementary school is approximately 50 feet from the pipeline.

City of Adelanto

The City of Adelanto, which was incorporated in 1970, is in the path of the pipeline (M.P. 37-45). The existing land use is primarily open space, scattered residential and industrial. The only sensitive receptor

TABLE 4.7.1-1
Land Use Requirements for the Cajon Pipeline

MP	Area	General Uses	Sensitive Uses	Requirements
	HIGH DESERT			
0-37	Bureau of Land Mgmt. (BLM)	Open space, recreation, utilities	None	Conformance with the BLM California Desert Conservation Area Plan, BLM use permit. Grant of ROW.
37-45	Adelanto	Vacant, residential, manufacturing, industrial	Bender School (50 ft.)	Encroachment permit; Conditional Use Permit for pump station and maintenance facility.
0-78 (portions)	San Bernardino Co.	Open space, scattered residential, California Aqueduct	Elementary School (50 ft.) Glen Helen Regional Park (500 ft.)	Permission to cross rights-of-way; franchise permit to construct across and along county roads; excavation permit; permission to cross aqueduct ROW; easement to construct across County flood control facilities.
49	Victorville	Desert open space	none	Street cut permit
58-77	U.S. Forest Service	Undeveloped, recreational, utilities	Pacific Crest Trail, California Riding and Hiking Trail, San Bernardino, National Forest, Cajon Pass Utility Corridor	No special use permit required
77-78	Fontana	Undeveloped	none	Encroachment permit
78-85	Rancho Cucamonga	Vacant, agricultural	Etiwanda High School (1,000 ft.) Etiwanda Intermediate (1,000 ft.)	Encroachment permit
85-96	Ontario	Vacant, agricultural, residential, commercial, industrial, Ontario International Airport	Residential Trailer Park (1,000 ft.) Bon View Park (1,500 ft.) Unity Park (1,500 ft.)	Building permit/plan check for any construction activity is required; new building setbacks from pipelines must be maximized (50' min.); site plans must conform to G.P. Policy 6.3; encroachment permit required for work in public ROW.

TABLE 4.7.1-1
Land Use Requirements for the Cajon Pipeline

MP	Area	General Uses	Sensitive Uses	Requirements
96-98	Montclair	Commercial, industrial	None	Construction permits, City Engineer's approval for crossing of sewer lines or public property
98-105	Pomona	Vacant, residential, commercial, industrial, railroad and hospital	Residential Trailer Parks (300 - 1,000 ft.) Garfield Park (1,500 ft.) Central Park (750 ft.) Hamilton Park (200 ft.) Elmwood School (1300 ft.) Catholic Girls School (1,500 ft.) St. Joseph's High School (500 ft.) Continuation School (500 ft.) Frank D. Lanterman State Hospital and Development Center (1,500 ft.)	Public use permit and public works permit.
105-117	Industry	Vacant, commercial, industrial	Walnut School (800 ft.) Ronimee School (L.A. Co. 1,000 ft.) Yorbita School (L.A. Co. 1,500 ft.) Hurley School (La Puente 1,000 ft.) Workman and Temple Homestead Museum (1,000 ft.) El Encanto Sanitarium (500 ft.) Valley Vocational Center (500 ft.) Trailer Parks California Country Club (400 ft.)	Development plan review required.
117-120 121-122	Los Angeles County	Residential, recreation, flood control, open space	Residential Whittier Narrows Recreational Area (50 ft.)	Encroachment permits and excavation permits; County also issues excavation permits in incorporated cities in Los Angeles County

TABLE 4.7.1-1
Land Use Requirements for the Cajon Pipeline

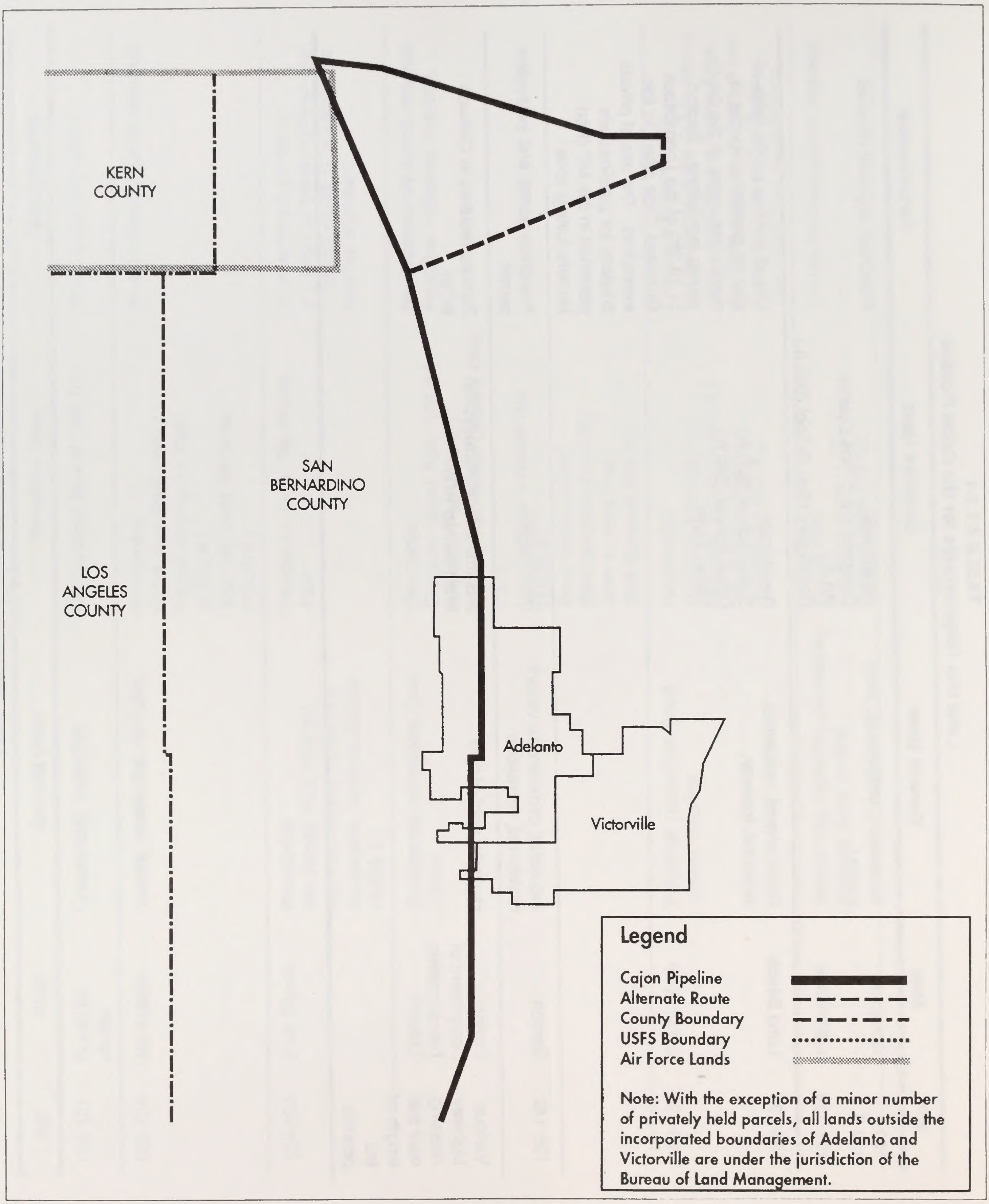
MP	Area	General Uses	Sensitive Uses	Requirements
120-121	South El Monte	Commercial, industrial	Continuation School (100 ft.)	Street excavation permit
122-124	Montebello	Vacant, residential, oil fields	Residential Grant Area Park (100 ft.) Reggie Rodriguez Park (1,000 ft.) Saint Vincents Seminary (1,000 ft.)	No discretionary permit required.
124-126	Pico Rivera	Residential Rio Hondo Park (100 ft.) Pio Pico School (1,500 ft.) Montebello Gardens School (1,500 ft.)	Residential uses, Rio Hondo Park	Encroachment permit for crossings of public rights-of-way, a special permit is required of a pipeline alignment.
126-129	Downey	Residential, recreation, flood control	Residential Treasure Island Park (100 ft.) Crawford Park (100 ft.) Downey Rio Hondo Country Club (50 ft.) Los Padrinos Juvenile Hall (1,000 ft.) Suva Street School (Bell Gardens 1,500 ft.) John A. Ford Park (Bell Gardens 200 ft.)	No discretionary permit required; franchise ordinance required.
129-131	South Gate	Industrial, recreation, flood control, freeway	Residential Hollydale Park (50 ft.) Hollydale School (1,000 ft.) Will Rogers School (Lynwood 1,000 ft.)	Comply with permitting requirements of the Public Works Dept., Building and Safety Dept, Business License Division of the Finance Dept., and with the City's franchise requirements.
131-134	Paramount	Residential, industrial, recreation, freeway, flood control	Residential Keppel School (1,500 ft.) Banana Park (50 ft.)	No discretionary permit required.

TABLE 4.7.1-1
Land Use Requirements for the Cajon Pipeline

MP	Area	General Uses	Sensitive Uses	Requirements
133-133.5	Compton	Recreation, institutional, flood control	Residential Compton Par 3 Golf Course (50 ft.) Dominguez High School (500 ft.)	Franchise approval required.
134-138	Long Beach	Flood control, residential, industrial, freeway,	Residential Sutter School (500 ft.) Union School (500 ft.) Trailer Parks	Use of existing public rights-of-way for pipeline purposes is outside the scope of the City's zoning regulations. Section 21.10.030 of the Long Beach Municipal Code refers to this exemption. The use of private property for pipelines are permitted in the MP (Port Manufacturing) zone.
138-142	Carson	Industrial, commercial, vacant, residential, recreation	Residential	Franchise permit and excavation permit
Various highway crossing over the length of the pipeline	California Department of Transportation	Highway right-of-way	Easement for construction in State-owned ROW	Permits required in Caltrans' ROW.

Jurisdictional Boundaries

Figure 4.7.1-1 (A)



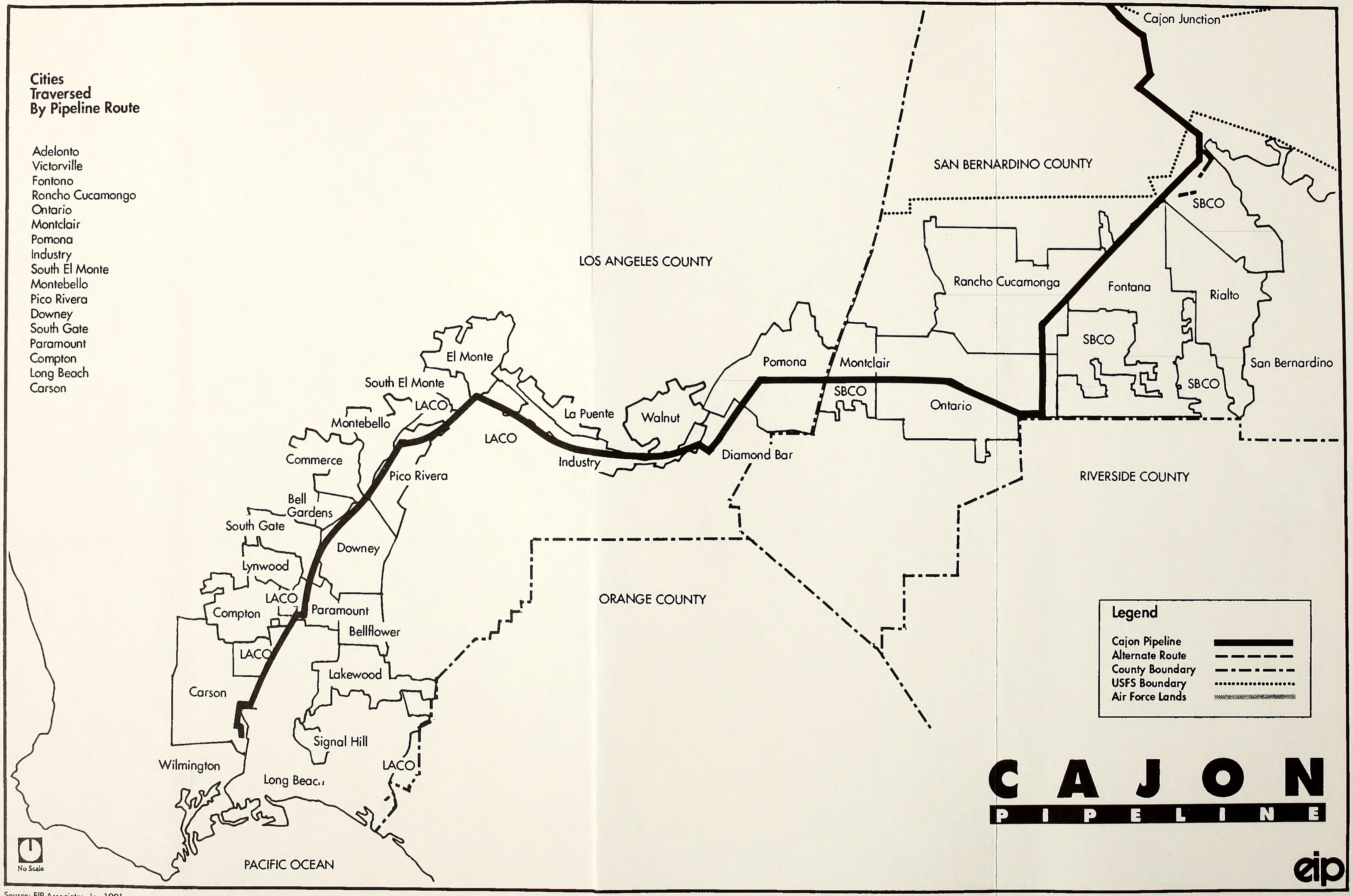
Note: With the exception of a minor number of privately held parcels, all lands outside the incorporated boundaries of Adelanto and Victorville are under the jurisdiction of the Bureau of Land Management.

Source: EIP Associates, Jan 1991

90439

Jurisdictional Boundaries

Figure 4.7.1-1 (B)



Source: EIP Associates, Jan 1991

90439

near the pipeline is Bender Elementary School (M.P. 43) located at the intersection of Crippen and Raccoon avenues.

City of Victorville

The pipeline parallels Baldy Mesa Road and passes through a quarter of a mile of the city near M.P. 49. The existing land use along the route is desert open space, and there are no sensitive receptors in this portion of the city.

U.S. Forest Service

The segment of the Cajon Pipeline route under the jurisdiction of the U.S. Forest Service is located in the San Bernardino National Forest. The land use along this segment is largely undeveloped land with a few scattered residential uses and small commercial facilities designed to serve casual visitors. The Cajon Pass area has been designated a utility corridor by the USFS and provides room for up to 30 major utilities. Through the pass, the route lies in close proximity to Interstate 15 (I-15), which provides access to the recreational areas of the San Bernardino and San Gabriel Mountains. The pipeline route would cross the Pacific Crest Trail and California Riding and Hiking Trail at approximately M.P. 62. At M.P. 72, the pipeline route is within 500 feet of Glen Helen Regional Park.

City of Fontana

For approximately 5.5 miles, the route parallels the border of the City of Fontana. At M.P. 78, near Appaloosa Drive and Duncun Canyon Road, the pipeline crosses a quarter mile section of the city. Land use along this short stretch is primarily open space, and no sensitive receptors are located within 1,500 feet of the pipeline route.

City of Rancho Cucamonga

At Summit Avenue the Cajon Pipeline enters the City of Rancho Cucamonga. From this city, the route enters the urbanized portion of the pipeline route. Adjacent land uses to the pipeline include vacant agricultural, commercial (business parks) and light industrial (warehouses). Etiwanda High School and Etiwanda Intermediate School are located less than a quarter mile from the pipeline route. Distances from the schools to the pipeline are presented in Table 4.7-1.

City of Ontario

The pipeline passes through the City of Ontario at M.P. 85 near the junctions of Interstate 10 and Interstate 15. Land use along this portion of the route is vacant agricultural, commercial and light industrial. At M.P. 89 the pipeline turns west, and follows the Union Pacific Railroad line past the southern boundaries of Ontario International Airport. Once past the airport, the pipeline enters higher density areas, primarily industrial land uses. Sensitive receptors located within 1,500 feet of the route include a mobile home park, Bon View Park and Unity Park. The city hall, library and other civic facilities are located within a half mile of the route.

City of Montclair

Before leaving San Bernardino County, the Cajon Pipeline passes through commercial and industrial areas in the City of Montclair. There are no sensitive receptors within a quarter mile of the pipeline route. However, Saratoga Park, Kingsley School and Howard School are located more than a quarter mile from the route.

City of Pomona

The City of Pomona is the first city along the pipeline route in Los Angeles County. The route passes through approximately six miles of residential, commercial, industrial and public service/open space land. Most of the route is on public ROW except for a few hundred feet of private land near Mt. Vernon Avenue and Oak Avenue. Approximately 3.5 miles of the Pomona portion of the pipeline parallels the Union Pacific Railroad line and about a mile along the Southern Pacific Railroad line. Sensitive receptors within 1,500 feet of the route include, four trailer parks, three recreational parks (Garfield, Central and Hamilton), four schools (Elmwood School, Catholic Girls School, St. Josephs High School, and a continuation high school), and the Frank D. Lanterman State Hospital and Development Center. The city hall, courthouse, police and fire station, and library are all a quarter mile to half mile from the proposed pipeline. Although the pipeline route does not pass through the City of Diamond Bar, the route runs within a 100 feet of a little league field and park within the city.

City of Industry

This segment of the proposed pipeline traverses approximately 20 miles of the City of Industry with portions of route passing through Los Angeles County land. The proposed pipeline follows the Union Pacific Railroad line and the San Jose Creek ROW. The creek is under the jurisdiction of the Los Angeles County Flood Control District. Predominant land uses along this segment include agricultural/open space, mixed office park/commercial, and light industrial (manufacturing and warehouses). Schools within 1,500 feet of the proposed pipeline include Walnut School, Rorimer School, Hurley School, Glenelder School, and Yorbita School. Other sensitive receptors include the Workman and Temple Homestead Museum, three trailer parks, El Encanto Sanitarium, Valley Vocational Center, and the California Country Club, all within 1,500 feet of the proposed pipeline route.

Los Angeles County

Los Angeles County land is primarily along M.P. 117 to 120 and 121 to 122. Predominant land uses include residential, recreational, flood control and open space. The major sensitive receptor is the Whittier Narrows Recreation Area.

City of South El Monte

The South El Monte segment of the Cajon Pipeline spans approximately a mile and a quarter of the city. The land uses along this route are primarily vacant, residential and commercial. Within 100 feet of the pipeline is a continuation school.

City of Montebello

This segment of the Cajon Pipeline parallels the eastern boundaries of the City of Montebello. Prominent land uses along this route include, open space/oil fields, residential and industrial. Sensitive receptors include parks, and the Saint Vincents Seminary.

City of Pico Rivera

The proposed Cajon Pipeline enters the city at Beverly Boulevard and traverses 3.5 miles to the border of Downey. Prominent land uses along the route include recreational, residential, and a percolation basin adjacent to Rio Hondo. Rio Hondo Park, Pio Pico School and the Montebello Gardens School are major sensitive receptors in the City of Pico Rivera.

City of Downey

This segment of the Cajon Pipeline spans an estimated 2.7 miles of the northwestern boundaries of the City of Downey. The route follows the Rio Hondo ROW. Land uses in the immediate area of the proposed pipeline include residential and recreational. Sensitive receptors in the City of Downey include the Treasure Island Park, Crawford Park, Downey Rio Hondo Country Club and Los Padrinos Juvenile Hall. Although the City of Bell Gardens is not part of the route, the route is within 100 feet of its border, and sensitive receptors include the Suva Street School (1,500 feet) and the John A. Ford Park (200 feet).

City of South Gate

In the City of South Gate, the Cajon Pipeline route follows the ROW on the eastern bank of the Rio Hondo. Existing land uses through this segment are primarily open space, recreational and light industrial. Residential areas are within 500 feet of the alignment. Sensitive receptors include Hollydale Park and Hollydale School at M.P. 132. Approximately 1,000 feet of the pipeline is adjacent to Will Rodgers School in the City of Lynwood.

City of Paramount

The proposed Cajon Pipeline continues south along the Los Angeles River ROW in the City of Paramount. Predominant land uses along this segment are residential and recreational. The route also crosses the Century Freeway (under construction) near M.P. 133.5. The Long Beach Freeway (I-710) parallels the pipeline route on the west side of the Los Angeles River. Keppel School and Banana Park are sensitive receptors along this segment of the proposed pipeline route.

City of Compton

The Cajon Pipeline would traverse approximately 1,500 feet of the eastern-most part of the City of Compton. The pipeline route passes through the Compton Par 3 Golf Course. Adjacent to the golf course and approximately 500 feet from the pipeline is Dominguez High School.

City of Long Beach

At M.P. 145.5, the Cajon Pipeline enters the City of Long Beach. Land use is predominantly vacant, residential, industrial and recreational. The route follows the Los Angeles River and the Long Beach Freeway (1-710), crossing the Artesia Freeway (SR-91) at M.P. 136. Land use along this Long Beach segment includes, vacant, recreational (drive-in theater), residential, industrial, and a nursery. Sensitive receptors include: the Sutter School, Union School, and three trailer parks.

City of Carson

The Cajon Pipeline route enters the City of Carson at Del Amo Boulevard. The route continues south along the west bank of the Los Angeles River. It heads west along the Union Pacific Railroad line and terminates at the GATX Carson Terminal. The land use along this route is primarily residential and heavy industrial.

Relevant Regulations

Construction of a pipeline would be subject to compliance with regulations of affected jurisdictions (ie. BLM, Caltrans, Los Angeles County Department of Public Works, counties and cities). In most cases, construction of this type of use is subject only to routine review. However, in some cities, encroachment permits for construction across public rights-of-way are discretionary actions subject to city council review.

4.7.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative traverses 13 miles of undeveloped desert land before joining the proposed route at M.P. 25. No sensitive receptors are located within 1,500 feet of the pipeline route for the first 13 miles. Sensitive receptors and land use for the remainder of the route are as described for the proposed route.

4.7.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative departs from the proposed route at approximately M.P. 73 where it crosses the I-15 and passes through Glen Helen Regional Park, and follows an existing utility easement on the south side of the freeway. The sensitive receptors and land use for the remainder of the route are as described for the proposed route.

4.7.4 M-70 PIPELINE

The information in this section is summarized from the Draft Environmental Impact Report/Statement on the proposed M-70 Pipeline replacement and optimization project.

Existing Land Uses and Jurisdictions

The proposed M-70 Pipeline route would traverse approximately 90 miles of developed and undeveloped land between Lebec and Mobil's Torrance refinery. Jurisdictions crossed, or adjacent to the route include Kern County, U.S. Forest Service, Santa Clarita, and the cities of Los Angeles, Culver City, Inglewood, Hawthorne and Torrance.

Predominant land uses along the northern portions of the proposed route, extending from Lebec to Santa Clarita, include open land, recreation, agriculture and light industry. Land uses along the southern section of the proposed route, including portions of Los Angeles County, and the cities of Los Angeles, Culver, Inglewood, Hawthorne and Torrance are primarily residential, commercial, light industrial and office park/business. Land uses surrounding the pumping stations, including the Lebec, Newhall, Saticoy, and Slauson stations and the Torrance refinery include commercial, industrial or open land.

Open land areas with intermittently disturbed parcels of agricultural, light industrial, and residential land uses dominate the northern section of the proposed route. This portion of the pipeline route includes lands within the jurisdictions of Kern County, the U.S. Forest Service, Los Angeles County and Santa Clarita. Open land areas that are considered recreational in nature, include Hungry Valley State Vehicular Recreational Area and Pyramid Lake.

Single and multiple family residences, interspersed with areas of commercial, industrial, recreational and office park/business land uses characterize the southern portion of the pipeline route. Primary areas of commercial and office/park business development are located in the cities of Los Angeles and Culver City; these areas generally span Sepulveda Boulevard between Slauson Avenue and Sunset Boulevard. Secondary area of commercial/office park uses are found along Sepulveda Boulevard between Victory and Ventura Boulevards. Industrial localities are concentrated in the City of Los Angeles on Woodley Avenue between Roscoe Boulevard and Sherman Way. Other areas principally dominated by industrial uses are located south of Newhall along the edges of the Interstate 5 (1-5) and Sierra Highway.

Recent surveys indicate that there are no hazardous waste facilities along the proposed pipeline route. Waste-related facilities flanking the route include the Yarnell Debris Basin, located south of the San Fernando Road/Interstate 5 intersection, and the Sepulveda Water Reclamation Plant, located at the northern border of the Sepulveda Dam Recreation Area.

Recreation

The northern section of the proposed pipeline route traverses the Angeles and Los Padres National Forests, the Hungry Valley State Vehicular Recreation Area and Pyramid Lake. Primarily falling under the jurisdictions of the Forest Service, State Department of Parks and Recreation, and Los Angeles County, these areas are protected and preserved Open Land Spaces utilized for recreational activities.

Within the southern portion of the proposed route, there are principally two large recreational areas, the Sepulveda Dam Recreational Area and Alondra Park. The Sepulveda Dam Recreational Area, flanking the western edge of the proposed route between M.P. 62 and M.P. 64, includes the Sepulveda Water Reclamation Plant, the Hjelte Sports Center, bridle and bike paths, golf courses, club houses, tennis courts, and a wildlife refuge area along the southern border. The Alondra Park, located between M.P. 88 and 89 near El Camino College, includes a golf course, club house, and two sections of park flanking the golf course.

Other large golfing facilities located near/or adjacent to the proposed route include the Valencia Golf Course (M.P. 42), and the Mountain Gate Golf Courses (M.P. 68 through 70).

4.7.5 PACIFIC PIPELINE

The information in this section is summarized from the proponent's Environmental Assessment for the proposed Pacific Pipeline.

The project is located within the Coastal Zone from Gaviota to Ventura. From Ventura to the destination refineries the project is located inland and away from the coast. The project route would traverse approximately 170 miles of developed and undeveloped land between the Gaviota Marine Terminal and the destination refineries. Predominant land uses along the northwestern portion of the project route, from Gaviota to San Fernando, include recreation, open space, agriculture, rural residential in the rural portions, and industrial, commercial, residential, recreational, churches, and schools in the small cities. In Los Angeles County along the southern portion of the project route, land uses are predominantly industrial, commercial, residential, recreational, schools, and churches in an urban setting. Land uses near both principal refinery destinations in Wilmington and El Segundo are entirely industrial.

The construction activities for the project are proposed to be maintained within the right of way (ROW) of the Southern Pacific Railroad (SPRR), except specific locations where construction activities would be in the shoulder of existing roadways (e.g., State Route 126 and The Old Road) or under urban streets (e.g., downtown Los Angeles). Because the project follows existing railroad and street ROW's, the new pipeline, also a linear transportation structure, is similar and compatible in nature to the existing land uses.

Starting at Gaviota at the existing Texaco-operated marine terminal facility, the project would continue eastward along the inland side of the Southern Pacific Railroad ROW, traversing lands adjacent to two state parks where an existing bicycle trail parallels the Southern Pacific Railroad ROW on the coastal side. U.S. Route 101 is immediately adjacent on the inland side of the railroad and pipeline, with agricultural uses inland beyond the highway. Proceeding eastward, the pipeline traverses agricultural, industrial, and rural-residential lands to Goleta.

From Goleta, the proposed pipeline would traverse urban areas through the cities of Santa Barbara, Montecito, and Carpinteria, with typical urban uses in adjacent areas being industrial, commercial, residential, recreational, schools, churches, and open space. Several Environmentally Sensitive Habitats (ESHs) are adjacent to the proposed pipeline in this vicinity, including the Santa Barbara Zoo, the Andrea Clark Wildlife Refuge, and the Carpinteria Salt Marsh. From Carpinteria to Ventura, the pipeline would follow the Southern Pacific Railroad ROW and then would join an existing 22-inch pipeline along the narrow coastal plain past several state and county beaches. Passing through the urban area of Ventura, the pipeline would follow the Southern Pacific Railroad ROW up the Santa Clara River Valley, traversing agricultural fields, orchards, and rural-residential area, then passing through the City of Santa Paula with adjacent industrial and commercial land uses. Continuing through agricultural lands, the pipeline would pass south of Piru, where the Keith Pump Station would be located adjacent to agricultural uses.

From Piru to near Interstate 5 (I-5), the route would pass through more agricultural and rural-residential uses. At Piru the pipeline would follow abandoned Southern Pacific Railroad ROW to a point near M.P. 97, where it would be located adjacent to State Route 126 for 3 miles before returning to abandoned Southern Pacific Railroad ROW. In this area, the pipeline would be constructed in highway or Southern Pacific Railroad ROW along a 7-mile segment that borders the northern side of the Santa Clara River Significant Ecological Area (SEA) at MP 105.6 for approximately 0.3 mile. The route would continue on within The Old Road ROW past several rural-residential areas and one new residential development called Stevenson Ranch. Along this segment, the route would border approximately 2 miles of the Santa Susana Mountains SEA.

Leaving The Old Road ROW and rejoining the Southern Pacific Railroad ROW at I-5 in San Fernando, the pipeline would remain inside existing urban land uses, and would proceed to terminals at Wilmington and El Segundo. In these urban areas, the pipeline would traverse various land uses, including industrial, commercial, recreational, residential, and vacant land, with some adjacent schools, parks, and churches. South of downtown Los Angeles, on Alameda Avenue, the frontage uses are almost entirely industrial and commercial. In general, there are residential uses immediately behind these industrial and commercial uses along Alameda Avenue. Throughout Los Angeles County, the pipeline would intersect numerous streets, highways and freeways.

4.7.6 FOUR CORNERS PIPELINE

The Four Corners Line 90 Pipeline is an existing pipeline extending 185 miles from Cadiz, San Bernardino County to Los Angeles. Approximately 145 miles of the pipeline are located within undeveloped land and open space. The remainder passes through urbanized areas along major transportation routes (i.e., highways and railroads). Along the 185 mile route the pipeline passes through the following cities: Twenty-nine Palms, Yucca Valley, Morongo Valley, Banning, Beaumont, Riverside, Corona/Norco, and Anaheim.

4.8 UTILITIES

4.8.1 CAJON PIPELINE

The Cajon Pipeline route would parallel or intersect the alignments of a number of utilities. Information on utilities provided in this section is based on data provided by Underground Services Alert, the BLM, and the Forest Service. Underground Service Alert is a non-profit organization that provides contractors and others with information on the location of underground utilities.

There are approximately 80 utilities-providers with underground utility lines in the vicinity of the proposed Cajon Pipeline. The facilities include water, natural gas, petroleum, telephone, cable television, and electrical power lines. Table 4.8.1-1 lists the utilities companies and public agencies with lines located in the vicinity of the proposed pipeline within the jurisdictions through which it passes. The exact location of all utilities would be determined as part of the final design of the pipeline.

Of particular note is the fact that 30 major utilities share the corridor through the Cajon Pass in which the proposed Cajon Pipeline would be located. Utilities in the Cajon Pass corridor include two 36-inch diameter natural gas lines owned by Southern California Gas Company, two Cal-Nev petroleum lines, (an 8-inch and a 14-inch line), three 500 kV electrical transmission systems and two distribution systems owned by Southern California Edison, and two 237 kV electrical transmission systems owned by Los Angeles Department of Water and Power. Six telecommunications companies have lines within Cajon Pass. In addition to the utilities, Interstate 15 (I-15) and tracks used by the Southern Pacific, Union Pacific, and Atchison, Topeka and Santa Fe railroads occupy the Cajon Pass corridor.

Applicable Plans and Policies

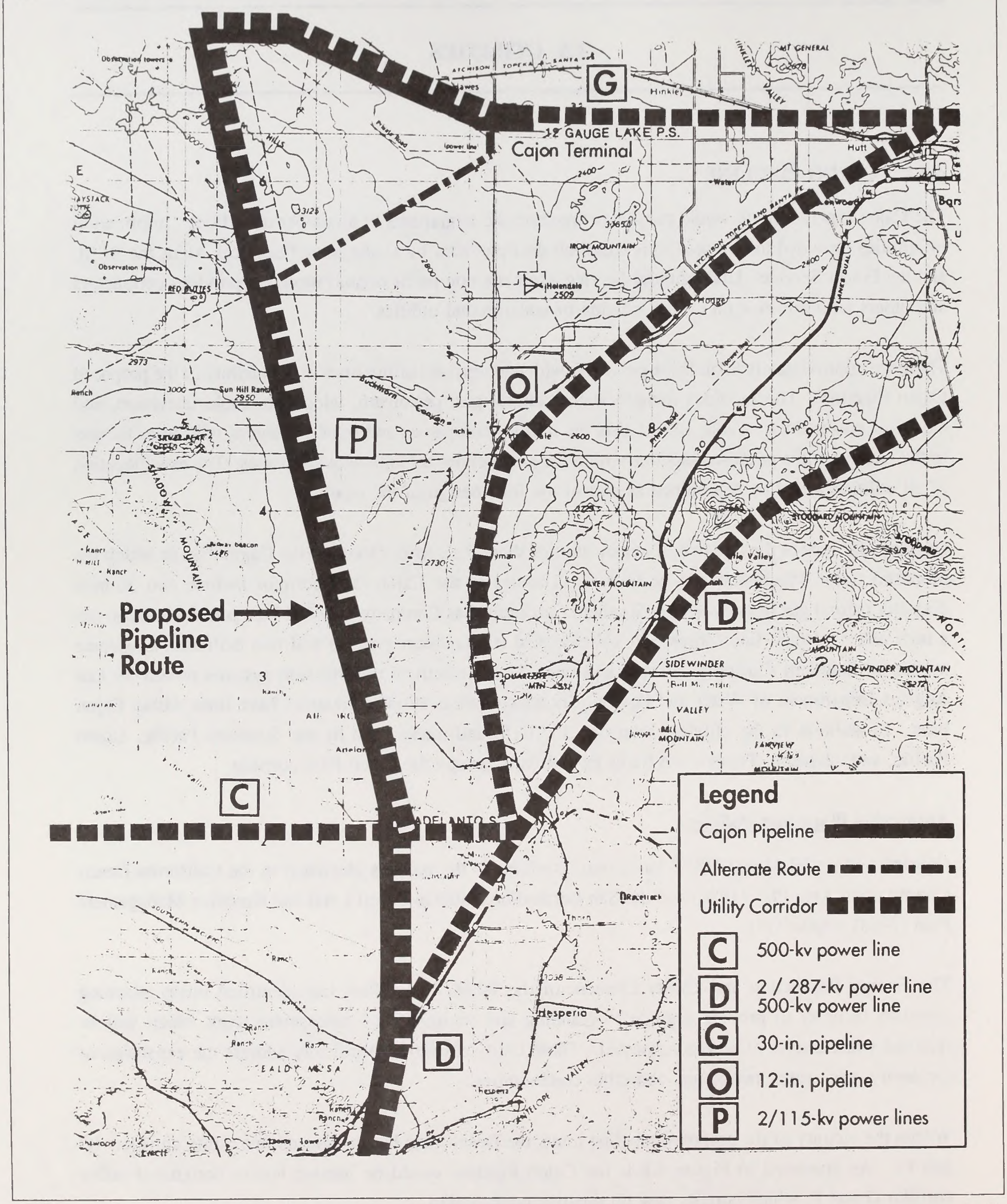
Construction on BLM and USFS lands must conform to the policies identified in the California Desert Conservation Area Plan (1980) and the San Bernardino National Forest Land and Resource Management Plan (1988) respectively.

The Energy Production and Utility Element of the BLM Desert Plan has identified utility planning corridors in order to provide a guide to planning and environmental assessment work which will be required when a right-of-way is requested. These utility corridors specifically address the expansion of electricity, gas, water, petroleum, and other commodities.

Within the vicinity of the proposed pipeline route, the Desert Plan has designated two utility corridors (G and P). As presented in Figure 4.8-1, the Cajon Pipeline would be located within designated utility corridor G and P, which permits new oil pipeline construction.

California Desert Conservation Area Plan Utility Corridors

Figure 4.8.1-1



No Scale

Source: Department of Interior, Bureau of Land Management, 1980

90439

TABLE 4.8.1-1
Utilities Which Are Adjacent To Or Cross The Cajon Pipeline Route

MP	Area	General Types	Providers
0-37	Bureau of Land Mgmt. (BLM)	Natural Gas/Oil	Pacific Gas & Electric Mojave Pipeline Southwest Gas Southern California Gas All American Pipeline
		Communication	Continental Telephone
		Electricity	Southern California Edison Los Angeles Depart. of Water & Power
37-45	Adelanto	Natural Gas/Oil	Southwest Gas Corp. Cal Nev Pipeline Southern California Gas
		Communication	Continental Telephone of Calif. Falcon Cablesystem
		Electricity	Southern California Edison
		Water	City of Adelanto Water
0-78 (portions)	San Bernardino Co.	Natural Gas/Oil	Pacific Gas & Electric Mojave Pipeline Southwest Gas Southern California Gas Cal Nev Pipeline
		Communications	AT&T Long Lines Contel Hi Desert Cablevision U.S. Sprint Western Union Telegraph MCI Telecommunications Falcon Cablesystem Williams Telecommunications Chambers Cable General Telephone Pacific Bell
		Electricity	Southern California Edison
		Water	City of San Bernardino Water Baldy Mesa Co. Water District
49	Victorville	Natural Gas/Oil	Cal Nev Pipeline Southern California Gas
		Communications	U.S. Sprint Western Union Telegraph MCI Telecommunications

TABLE 4.8.1-1
Utilities Which Are Adjacent To Or Cross The Cajon Pipeline Route

MP	Area	General Types	Providers
58-78	U.S. Forest Service	Natural Gas/Oil	Southern California Gas Cal Nev Pipeline
		Communications	MCI Telecommunications US Sprint AT&T Continental Telephone Williams Telecommunications General Telephone
		Electricity	Southern California Edison Los Angeles Dept. of Water & Power
		Water	San Bernardino City Water Wells
78-95	Rancho Cucamonga	Natural Gas/Oil	Southern California Gas
		Communications	Pacific Bell General Telephone Simmons Cable TV DCA Cablevision Dimension Cable Williams Telecommunications U.S. Sprint Comcast Cablevision AT&T Long Lines
		Electricity	Southern California Edison
		Water	Cucamonga Co. Water Dist. San Gabriel Valley Muni. Water Dist. Chino Basin Muni. Water Dist. Metropolitan Water Dist.
85-96	Ontario	Natural Gas/Oil	Southern California Gas Santa Fe Pacific Pipeline
		Communications	General Telephone Williams Telecommunications Western Union Telegraph MCI Telecommunications Pacific Bell
		Electricity	Southern California Edison
		Water	Cucamonga Co. Water Dist.
96-98	Montclair	Natural Gas/Oil	Southern California Gas Santa Fe Pacific Pipeline
		Communications	General Telephone Williams Telecommunications Western Union Telegraph MCI Telecommunications Comcast Cablevision
		Electricity	Southern California Edison
		Water	Monte Vista Water Dist.

TABLE 4.8.1-1
Utilities Which Are Adjacent To Or Cross The Cajon Pipeline Route

MP	Area	General Types	Providers
95-105	Pomona	Natural Gas/Oil	Southern California Gas
			Santa Fe Pacific Pipeline
		Communications	MCI Telecommunications
			Western Union Telegraph
			Williams Telecommunications
			Pacific Bell
			General Telephone
		Electricity	Southern California Edison
		Water	Metropolitan Water Dist.
			Walnut Valley Water Dist.
			City of Pomona Water Department
		Sewer	City of Pomona Public Works Department
			Los Angeles County Sanitation District
105-117	Industry	Natural Gas/Oil	Southern California Gas
			Santa Fe Pacific Pipeline
		Communications	MCI Telecommunications
			Western Union Telegraph
			Williams Telecommunications
			Cencom Cable TV
			General Telephone
			Jones Intercable
			United Cable TV
		Electricity	Southern California Edison
		Water	Metropolitan Water Dist.
			Walnut Valley Water Dist.
			Suburban Water System
			La Puente Valley Co. Water Dist.
			San Gabriel Valley Muni. Water Co.
			Southern California Water
117-120 121-122	Los Angeles County	Natural Gas/Oil	Southern California Gas
			Texaco Gas Dept.
			Chevron USA
		Communications	General Telephone
			MCI Telecommunications
			Pacific Bell
			Western Union Telegraph
			Williams Telecommunications
			United Cable TV
			Concom Cable TV
		Electricity	Southern California Edison
		Water	San Gabriel Valley Municipal Water Co.
			California Domestic Water

TABLE 4.8.1-1
Utilities Which Are Adjacent To Or Cross The Cajon Pipeline Route

MP	Area	General Types	Providers
120-121	South El Monte	Natural Gas/Oil	Southern California Gas
		Communications	Continental Cablevision
			Pacific Bell
		Electricity	Southern California Edison
		Water	San Gabriel Valley Municipal Water Co.
122-124	Montebello	Natural Gas/Oil	Chevron USA
			Southern California Gas Co.
			Union Oil Corp.
			Mobil Oil Corp.
		Communications	Cencom Cable TV
			Pacific Bell
			General Telephone
			Williams Telecommunications
			MCI
			Western Union Telegraph
			United Cable TV
		Electricity	Southern California Edison
		Water	Montebello Land & Water Co.
			South Montebello Irrigation District
			San Gabriel Valley Municipal Water Co.
124-126	Pico Rivera	Natural Gas/Oil	Southern California Gas Co.
		Communications	General Telephone
			Pacific Bell
			Cencom Cable TV
			General Telephone
		Electricity	Southern California Edison
		Water	South Montebello Irrigation Dist.
			California Water Service
126-129	Downey	Natural Gas/Oil	Southern California Gas Co.
			Golden West Refining Co.
			Mobil Oil Corp.
			Powerine Oil Co.
		Communications	Continental Cablevision
			General Telephone
			Cencom Cable
			U.S. Sprint
		Electricity	Southern California Edison
		Water	Park Water Company
			California Water Service
			Southern California Water - Grp. 2

TABLE 4.8.1-1
Utilities Which Are Adjacent To Or Cross The Cajon Pipeline Route

MP	Area	General Types	Providers
129-131	South Gate	Natural Gas/Oil	Southern California Gas Co. Atlantic Richfield/Four Corners Chevron USA Mobil Oil Corp.
		Communications	General Telephone Pacific Bell Continental Cablevision
		Electricity	Southern California Edison
		Water	Metropolitan Water District
131-134	Paramount	Natural Gas/Oil	Southern California Gas Co. Atlantic Richfield/Four Corners Chevron USA
		Communications	Continental Cablevision Pacific Bell
		Electricity	Southern California Edison
		Water	Metropolitan Water District Southern California Water - Grp. 2 Park Water Co.
133-134	Compton	Natural Gas/Oil	Southern California Gas Co. Atlantic Richfield/Four Corners GATX Tank Storage Terminals Corp.
		Communications	Continental Cablevision Pacific Bell
		Electricity	Southern California Edison
		Water	Metropolitan Water District
134-138	Long Beach	Natural Gas/Oil	Southern California Gas Co. GATX Tank Storage Terminals Santa Fe Pacific Pipeline Atlantic Richfield/Four Corners Powerine Oil Co. Union Oil Corp. Texaco Gas Dept.
		Communications	AT&T Long Lines Pacific Bell General Telephone Simmons Cable TV Continental Cablevision American Cable Systems
		Electricity	Southern California Edison
		Water	Long Beach Water Dept. Metropolitan Water Dist. Dominguez Water Corp.

TABLE 4.8.1-1
Utilities Which Are Adjacent To Or Cross The Cajon Pipeline Route

MP	Area	General Types	Providers
138-142	Carson	Natural Gas/Oil Communications Electricity Water	Atlantic Richfield Domiguez Water Corporation Pacific Bell Southern California Edison Shell Oil Santa Fe Pacific Pipeline Texaco Gas Ultraman Refining GATX Tank Storage Terminal Getty Oil Gatron Industries Mobil Oil

The majority of the pipeline route south of M.P. 36 is in privately held lands. The pipeline from M.P. 36 to M.P. 47 is within an approved utility corridor of the City of Adelanto. From M.P. 47 to M.P. 73, it is within USFS designated utility corridors. The San Bernardino National Forest Land and Resource Plan has designated the central portion of Cajon Pass as a utility corridor. Under this designation there are three possible management directions:

1. Confine the Cajon Utility Corridor to its present location and utilize the corridor to the maximum extent possible. Upgrading and enlargement of existing facilities will be preferred to construction of new facilities that may further congest the corridor.

2. New transportation and utility facilities will be located adjacent to existing utilities whenever possible to minimize impacts on other resources.

3. Designate additional transportation and utility corridors only if the need arises. Corridors will conform to regional guidelines.

The remainder of the pipeline route from M.P. 74 to M.P. 142 is within public owned right-of-ways or private lands.

4.8.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative runs south from 12-Gauge Lake for 1.5 miles and then turns southwest till it rejoins the proposed route at U.S. 395. For the 13 miles across the desert it follows a dirt road that once paralleled a telegraph line. Utilities for the remainder of the route are as described in Table 4.8.1-1.

4.8.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative departs from the proposed route at approximately M.P. 73 where it crosses the I-15 and follows an existing utility easement through Glen Helen Regional Park to Lytle Creek where it recrosses the I-15 and rejoins the proposed route at M.P. 74. Utilities for the remainder of the route are as described in Table 4.8.1-1.

4.8.4 M-70 PIPELINE

No information is available on the relationship between the M-70 pipeline to other utilities. However, the M-70 Pipeline is located within the Tejon Pass which is subject to a similar concentration of utilities as the Cajon Pass. Major utilities include two Southern California Gas pipelines, two petroleum pipelines operated by the Four Corners Pipeline Company, the State Water Project, Interstate 5, and Department of Water and Power transmission lines.

4.8.5 PACIFIC PIPELINE

No information is available on the relationship between the Pacific Pipeline to other utilities. The pipeline is not located within any converging pass area but adjacent to the existing right-of-way for the Southern Pacific Railroad.

4.8.6 FOUR CORNERS PIPELINE

No information is available on the relationship between the Four Corners Line 90 Pipeline to other utilities. However, as the Four Corners Line 90 Pipeline passes through the Morongo Valley to Yucca Valley, it would be subject to a minor concentration of utilities to meet the infrastructure needs of the residents of Morongo Valley, Yucca Valley, Joshua Tree and other communities of the High Desert. The valleys are traversed by State Route 62.

4.9 SOCIOECONOMICS

4.9.1 CAJON PIPELINE

NEPA's and CEQA's requirements for socioeconomic analysis are worthy of note. NEPA requires a discussion of social and economic environmental effects when social and natural or physical environmental effects are interrelated.[1] However, NEPA states that economic or social effects are not intended by themselves to require preparation of an environmental impact statement, even though NEPA comprehensively defines the human environment to include the natural and physical environment and the relationship of people with that environment.[2] NEPA's discussion of the significance of impacts does not specify whether or not a determination of significance should be made for social or economic effects. However, for informational purposes, the analysis in this document does set up criteria and makes such an assessment.[3]

CEQA on the other hand does not require an evaluation of social or economic issues and does not consider social or economic effects as significant impacts on the environment.[4] However, through a logical chain of cause and effect, they can be used to find that a related physical impact on the environment is significant. Additionally, social and economic information can be relevant to decision makers in their deliberations over project approval. CEQA allows that such information can be provided in any format desired, including within an EIR, as is the case with this document.

This section establishes the baseline for the impact analysis by summarizing the socioeconomic characteristics of each study area. The summarized data are historical and include projected employment, population, and housing growth as well as current property tax revenue.

The study area for the socioeconomic analysis consists of a corridor of those cities through which the pipeline actually passes, and those cities in the immediate vicinities listed below.

County	Pipeline Transects	Pipeline Vicinity
San Bernardino	Adelanto	San Bernardino
	Victorville	Rialto
	Fontana	
	Rancho Cucamonga	
	Ontario	
	Montclair	

County	Pipeline Transects	Pipeline Vicinity
Los Angeles	Pomona	West Covina
	Industry	Diamond Bar
	South El Monte	La Puente
	Pico Rivera	Walnut
	Montebello	Bell Gardens
	Downey	Lynwood
	South Gate	Commerce
	Paramount	
	Compton	
	Long Beach	
	Carson	

Tables 4.9.1-1 through 4.9.1-5 below summarize the employment, population, and housing characteristics of this study area based upon the most recent data from SCAG (Southern California Association of Governments).[5]

The tables indicate that study area employment in both San Bernardino and Los Angeles Counties comprises approximately one-half of each counties' employment, respectively. Table 4.9.1-1 presents the socioeconomic projections of the study area, and Table 4.9.1-2 presents the employment estimates and projections by cities.

Table 4.9.1-3 summarizes construction employment between 1980 and 1990. The data indicate that construction employment comprised about 6 percent of total wage and salary employment in the Riverside/San Bernardino Metropolitan Statistical Area (MSA) and about 3 percent in the Riverside/Los Angeles MSA on average.

The 1990 property tax revenue amounted to about $18 million for the San Bernardino Study area and amounted to about $83.7 million for the Los Angeles Study area.[6]

4.9.2 KRAMER SEGMENT ALTERNATIVE

Population and employment statistics are as described in Section 4.9.1.

4.9.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

Population and employment statistics are as described in Section 4.9.1.

TABLE 4.9.1-1
Socioeconomic Profile

Study Area	1987 (000s)	2010 (000s)	Period Change	Annual Average Change	1992 Estim. (000s)
Employment					
San Bernardino	200	443	121%	10,526	253
Los Angeles	664	816	23%	6,619	697
Population					
San Bernardino	509	888	75%	16,512	591
Los Angeles	1,599	1,876	17%	12,081	1,659
Housing					
San Bernardino	184	343	86%	6,889	226
Los Angeles	529	661	25%	5,729	558

SOURCE: EIP Associates. See also Tables 4.9.1-2 through 4.9.1-4.

TABLE 4.9.1-2
Socioeconomic Profile - Employment

	Employment		Growth			Estimate[1]	
AREA	**1987**	**2010**	**Period Change**	**Annual Average**	**5-Year Average**	**1992**	**1993**
SAN BERNARDINO COUNTY	373,854	785,400	110%	17,893	89,467	463,321	481,214
San Bernardino Study Area	200,491	442,584	121%	10,526	52,269	253,120	263,646
Study Area Share of County	54%	56%	na	na	na	na	na
Pipeline Passes Through:							
Adelanto	1,204	4,200	249%	130	651	1,855	1,986
Fontana	21,614	47,004	117%	1,104	5,520	27,134	28,237
Rancho Cucamonga	25,338	83,339	229%	2,522	12,609	37,947	40,469
Ontario	41,483	117,360	183%	3,299	16,495	57,978	61,277
Montclair	11,781	18,181	54%	278	1,391	13,172	13,451
Victorville	11,680	26,541	126%	642	3,211	14,892	15,534
In The Vicinity:							
Rialto	10,527	31,574	200%	915	4,575	15,102	16,018
San Bernardino	76,864	114,475	49%	1,635	8,176	85,040	86,676
LOS ANGELES COUNTY	4,354,380	5,392,248	24%	45,125	225,623	4,580,003	4,625,128
Los Angeles Study Area	723,950	887,835	23%	6,821	34,106	768,056	774,875
Study Area Share of County	17%	16%	na	na	na	na	na
Pipeline Passes Through:							
Carson	59,104	75,625	28%	718	3,592	62,696	63,414
Compton	30,274	38,023	26%	337	1,685	31,959	32,295
Downey	38,407	46,208	20%	339	1,696	40,103	40,442
Industry	60,579	73,813	22%	575	2,877	63,456	64,031
Long Beach	215,831	236,306	9%	890	4,451	220,282	221,172
Montebello	26,194	31,384	20%	226	1,128	27,322	27,548
Paramount	21,217	22,631	7%	61	307	21,524	21,586
Pico Rivera	28,458	34,644	22%	269	1,345	29,803	30,072
Pomona	53,876	84,573	57%	1,335	6,673	60,549	61,884
South El Monte	20,837	23,827	14%	130	650	21,487	21,617
South Gate	19,444	24,125	24%	204	1,018	20,462	20,665
Unincorporated Los Angeles County[2]	38,381	55,360	44%	738	3,691	42,072	42,810
Pipeline In The Vicinity Of:							
West Covina	24,206	33,702	39%	413	2,064	26,270	26,683
Bell Gardens	8,784	8,804	0%	1	4	8,788	8,789
Commerce	69,926	74,564	7%	202	1,008	70,934	71,136
La Puente	6,556	10,510	60%	172	860	7,416	7,587
Lynwood	11,876	16,736	41%	211	1,057	12,933	13,144

SOURCE: EIP Associates, SCAG Growth Management Plan (1989).

[1] 1992 and 1993 estimates based on a straight line interpolation.

[2] Based on East San Gabriel and Long Beach/Downey subregion.

TABLE 4.9.1-3
Construction Employment

	RIVERSIDE / SAN BERNARDINO MSA					LOS ANGELES / LONG BEACH MSA				
YEAR	TOTAL	% Change	CONST.	% Change	% Total	TOTAL	% Change	CONST.	% Change	% Total
1972	330,300		16,400		5%	2,896,100		97,200		3%
1973	347,800	5.3%	17,800	8.5%	5%	3,038,200	4.9%	103,600	6.6%	3%
1974	351,900	1.2%	14,900	-16.3%	4%	3,082,500	1.5%	99,100	-4.3%	3%
1975	349,800	-0.6%	12,800	-14.1%	4%	3,034,200	-1.6%	89,000	-10.2%	3%
1976	365,900	4.6%	14,500	13.3%	4%	3,119,200	2.8%	89,900	1.0%	3%
1977	394,300	7.8%	20,400	40.7%	5%	3,243,200	4.0	96,20	7.0%	3%
1978	427,300	8.4%	26,000	27.5%	6%	3,443,200	6.2%	105,500	9.7%	3%
1979	448,800	5.0%	29,600	13.8%	7%	3,596,800	4.5%	116,700	10.6%	3%
1980	452,800	0.9%	26,100	-11.8%	6%	3,622,400	0.7%	119,100	2.1%	3%
1981	458,900	1.3%	23,100	-11.5%	5%	3,653,000	0.8%	118,700	-0.3%	3%
1982	452,600	-1.4%	19,600	-15.2%	4%	3,544,400	-3.0%	100,000	-15.8%	3%
1983	467,400	3.3%	23,100	17.9%	5%	3,567,400	0.6%	96,800	-3.2%	3%
1984	504,200	7.9%	32,600	41.1%	6%	3,735,800	4.7%	109,000	12.6%	3%
1985	547,500	8.6%	38,400	17.8%	7%	3,835,900	2.7%	120,900	10.9%	3%
1986	584,600	6.8%	43,900	14.3%	8%	3,919,200	2.2%	130,700	8.1%	3%
1987	623,100	6.6%	49,700	13.2%	8%	4,031,100	2.9%	143,700	9.9%	4%
1988	659,000	5.8%	55,700	12.1%	8%	4,121,900	2.3%	148,400	3.3%	4%
1989	704,300	6.9%	65,200	17.1%	9%	4,209,400	2.1%	155,900	5.1%	4%
1990	724,000	2.8%	69,800	7.1%	10%	4,297,700	2.1%	163,100	4.6%	4%
Avg. Annual Growth	21,872	6.6%	2,967	18.1%	6%	77,867	2.7%	3,661	3.8%	3%

SOURCE: EIP Associates, EDD (California State Employment Development Department).
Annual Planning Information, July 1990 for Riverside/San Bernardino, June 1989 for Los Angeles/Long Beach; 1990 data for Riverside/San Bernardino is Aug '89 through Aug. '90 average from EDD Labor Market Bulletin.

TABLE 4.9.1-4
Socioeconomic Profile - Population

	Population		Growth			Estimate	
AREA	**1987**	**2010**	**Period % Change**	**Annual Average**	**5-Year Average**	**1992**	**1993**
SAN BERNARDINO COUNTY	1,171,133	2,171,615	85%	43,499	217,496	1,388,629	1,432,128
San Bernardino Study Area	508,702	888,472	75%	16,512	82,559	591,261	607,773
Study Area Share of County	43%	41%	na	na	na	na	na
Pipeline Passes Through:							
Adelanto	4,708	13,399	185%	378	1,889	6,597	6,975
Fontana	60,121	116,343	94%	2,444	12,222	72,788	74,788
Rancho Cucamonga	82,105	178,377	117%	4,186	20,929	103,034	107,219
Ontario	113,887	136,662	20%	990	4,951	118,838	119,828
Montclair	25,357	33,075	30%	336	1,678	27,035	27,370
Victorville	24,813	76,466	208%	2,246	11,229	36,042	38,288
Pipeline In The Vicinity Of:							
Rialto	56,573	122,228	116%	2,855	14,273	70,846	73,700
San Bernardino	141,138	211,922	50%	3,078	15,388	156,526	159,603
LOS ANGELES COUNTY	8,416,915	10,231,203	22%	78,882	394,410	8,811,325	8,890,208
Los Angeles Study Area	1,610,001	1,889,739	17%	12,162	60,814	1,616,813	1,683,247
Study Area Share of County	19%	18%	na	na	na	na	na
Pipeline Passes Through:							
Carson	88,404	98,550	11%	441	2,206	90,610	91,051
Compton	92,894	95,101	2%	96	480	93,374	93,470
Downey	86,673	98,996	14%	536	2,679	89,352	89,888
Industry	375	739	97%	16	79	454	470
Long Beach	405,788	481,553	19%	3,294	16,471	422,259	425,553
Montebello	56,308	59,936	6%	158	789	57,097	57,254
Paramount	41,845	43,998	5%	94	468	42,313	42,407
Pico Rivera	54,632	62,643	15%	348	1,742	56,374	56,722
Pomona	117,741	149,166	27%	1,366	6,832	124,573	125,939
South El Monte	18,064	19,008	5%	41	205	18,269	18,310
South Gate	78,790	82,457	5%	159	797	79,587	79,747
Unincorporated Los Angeles County	338,905	438,343	29%	4,323	21,617	360,522	364,845
Pipeline In The Vicinity Of:							
Bell Gardens	37,580	39,766	6%	95	475	38,055	38,150
Commerce	11,376	13,244	16%	81	406	11,782	11,863
La Puente	33,436	34,417	3%	43	213	33,649	33,692
Lynwood	53,761	56,501	5%	119	596	54,357	54,476
West Covina	93,429	115,321	23%	952	4,759	98,188	99,140

SOURCE: EIP Associates, SCAG Growth Management Plan.

TABLE 4.9.1-5
Socioeconomic Profile - Total Housing

	Total Housing		Growth			Estimate	
AREA	**1987**	**2010**	**Period % Change**	**Annual Average**	**5-Year Average**	**1992**	**1993**
SAN BERNARDINO COUNTY	476,688	965,962	103%	21,273	106,364	583,052	604,325
San Bernardino Study Area	184,343	342,796	86%	6,889	34,446	218,790	225,678
Study Area Share of County	39%	35%	na	na	na	na	na
Pipeline Passes Through:							
Adelanto	2,229	6,800	205%	199	994	3,223	3,421
Fontana	22,140	44,199	100%	959	4,795	26,935	27,895
Rancho Cucamonga	28,641	58,691	105%	1,307	6,533	35,174	36,480
Ontario	37,482	48,383	29%	474	2,370	39,852	40,326
Montclair	8,844	12,259	39%	148	742	9,586	9,735
Victorville	9,868	34,200	247%	1,058	5,290	15,158	16,215
Pipeline In The Vicinity Of:							
Rialto	19,848	47,400	139%	1,198	5,990	25,838	27,035
San Bernardino	55,291	90,864	64%	1,547	7,733	63,024	64,571
LOS ANGELES COUNTY	3,023,412	3,959,098	31%	40,682	203,410	3,226,822	3,267,504
Los Angeles Study Area	529,031	660,810	25%	5,729	28,648	557,679	563,407
Study Area Share of County	55%	52%	na	na	na	na	na
Pipeline Passes Through:							
Carson	24,018	31,905	33%	343	1,715	25,733	26,075
Compton	23,960	26,462	10%	109	544	24,504	24,613
Downey	33,829	40,544	20%	292	1,460	35,289	35,581
Industry	89	204	129%	5	25	114	119
South El Monte	4,803	5,119	7%	209	1,044	4,872	4,885
Long Beach	167,606	204,173	22%	1,590	7,949	175,555	177,145
Montebello	18,719	22,093	18%	147	733	19,452	19,599
Paramount	12,552	14,789	18%	97	486	13,038	13,136
Pico Rivera	15,921	20,664	30%	206	1,031	16,952	17,158
Pomona	36,456	49,142	35%	552	2,758	39,214	39,765
South Gate	23,625	25,137	6%	66%	329	23,954	24,019
Unincorporated Los Angeles County	103,750	144,730	39%	1,782	8,909	112,659	114,440
Pipeline In The Vicinity Of:							
Bell Gardens	9,539	10,271	8%	32	159	9,698	9,730
Commerce	3,273	4,362	33%	47	237	3,510	3,557
La Puente	8,834	10,308	17%	64	320	9,154	9,219
Lynwood	14,506	15,907	10%	61	305	14,811	14,871
West Covina	30,824	39,362	28%	371	1,856	32,680	33,051

SOURCE: EIP Associates, SCAG Growth Management Plan.

4.9.4 M-70 PIPELINE

The information in this section is summarized from the Draft Environmental Report Statement on the proposed M-70 Pipeline replacement and optimization project.

Employment

Table 4.9.5-1 shows county employment and construction for Los Angeles and Kern Counties.

TABLE 4.9.5-1
Los Angeles and Kern County Employment
Annual Averages and Forecast

	Annual Averages		Forecasted Annual Average[2]		
Industry	**1987**	**1988**	**1989**	**1990**	**1992**
Los Angeles County - Total All Industries	4,031.1	4,121.9	4,209.4	4,297.7	*N/A
Construction	143.7	148.8	155.9	163.1	N/A
Kern County - Total All Industries	187.8	188.1	189.5	192.0	197.5
Construction	9.6	9.7	9.8	10.0	10.0

Source: California Employment Development Department, 1989

[1] 1992 Projections are not available

[2] Annual Averages are in thousands of people

Population

The most recent population estimate for Los Angeles County (January 1989) is 8,650,300. The estimated population of Kern County for 1989 is 526,600. Approximately half of the population of Kern County resides in unincorporated areas. Population estimates for areas traversed by the proposed pipeline route are shown in Table 4.9.5-2.

TABLE 4.9.5-2
Population for Cities Along M-70 Pipeline Proposed Route
January 1, 1989

Name of City	Population
Culver City	40,950
Hawthorne	67,400
Inglewood	102,300
Los Angeles	3,400,500
Santa Clarita	115,700
Torrance	142,200
Unincorporated Los Angeles County	1,006,400
Total Los Angeles County	8,650,300
Total Kern County	526,600

Source: Los Angeles County Department of Public Works, 1990; State of California Department of Finance, 1989; Employment Development Department, 1989.

4.9.5 PACIFIC PIPELINE

The information in this section is summarized from the proponent's Environmental Assessment for the Proposed Pacific Pipeline Project. This section summarizes historical and present socioeconomic conditions in Santa Barbara, Ventura, and the Los Angeles counties. Topics reviewed include population, employment, and housing.

Population

Population for the study area is summarized in Table 4.9.6-1. Between 1980 and 1990, the population increased by 23.7 percent in Santa Barbara County, 26.4 percent in Ventura County, and 18.5 percent in Los Angeles County. The 1990 census population was estimated at 369,608 in Santa Barbara County, 669,016 in Ventura County, and 8,863,164 in Los Angeles County. The average annual growth rate in the study area was 2.2 percent in Santa Barbara County, 2.4 percent in Ventura County, and 1.7 percent in Los Angeles County.

Employment

The total labor force for the three-county area is estimated at over 4 million. The construction sector represents 3.9 percent of total employment within the study area, with over 183,000 employed in the construction sector within three counties. Table 4.9.6-2 shows the employment breakdown by county.

TABLE 4.9.6-1
Study Area Population Characteristics

County/City	1980 Census[a]	1/1/89[b]	1/1/90[b]	1990 Census[a]	Percent Change 1980-1990 (%)	Average Annual Growth Rate 1980-1990	1990 Persons Per Square Mile
Santa Barbara County	298,694	347,000	354,100	369,608	23.7	2.2	135.0
Carpinteria	10,835	12,400	12,600	13,747	26.9	2.4	5,081.9
Isla Vista	NA	NA	NA	20,395	NA	NA	9,610.8
Santa Barbara	74,414	79,200	80,400	85,571	15.0	1.4	4,528.7
Unincorporated	NA	159,400	161,900	NA	NA	NA	NA
Ventura County	529,174	655,800	668,600	669,016	26.4	2.4	362.4
Fillmore	9,602	11,250	11,450	11,992	24.9	2.2	4,540.5
Piru CDP	1,284	NA	NA	1,157	(9.9)	(1.0)	429.8
Santa Paula	20,552	24,050	24,000	25,062	21.9	2.0	5,448.1
Ventura	74,474	91,100	92,300	92,575	24.3	2.2	4,417.4
Unincorporated	NA	93,900	97,700	NA	NA	NA	NA
Los Angeles County	7,477,503	8,650,300	8,769,900	8,863,164	18.5	1.7	2,182.1
Los Angeles County	84,625	93,800	95,300	93,643	10.7	1.0	5,398.2
Carson	81,221	88,800	88,800	83,995	15.3	1.4	4,457.6
Compton	81,286	93,000	93,400	90,454	11.3	1.1	8,896.7
El Segundo	13,752	15,750	16,000	15,223	10.7	1.0	2,743.8
Florence	48,662	NA	NA	57,147	17.4	1.6	16,092.8
Glendale	139,060	166,100	174,800	180,038	29.5	2.6	5,881.5
Hawthorne	56,447	67,400	67,800	71,349	26.4	2.4	12,025.6
Huntington Park	46,223	51,200	52,000	56,065	21.3	2.0	18,375.3
Los Angeles	2,966,850	3,400,500	3,433,600	3,485,398	17.5	1.6	7,426.1
Lynwood	48,548	53,700	54,400	61,945	27.6	2.5	12,756.1

TABLE 4.9.6-1
Study Area Population Characteristics

County/City	1980 Census[a]	1/1/89[b]	1/1/90[b]	1990 Census[a]	Percent Change 1980-1990 (%)	Average Annual Growth Rate 1980-1990	1990 Persons Per Square Mile
Manhattan Beach	31,542	35,150	35,100	32,063	1.7	0.2	8,154.2
San Fernando	17,731	20,700	20,650	22,580	27.3	2.4	9,455.2
Santa Clarita	NA	115,700	121,200	110,642	NA	NA	2,733.4
South Gate	66,784	79,200	79,800	86,284	29.2	2.6	11,737.6
Willowbrook	30,845	NA	NA	32,772	6.2	0.6	8,762.3
Unincorporated	NA	1,006,400	1,027,800	NA	NA	NA	NA

[a] U.S. Census Bureau, 1980 and 1990

[b] California Department of Finance Report 90E-1, Population of California Cities, May 1990

TABLE 4.9.6-2
Study Area Employment
(Thousands)

	Santa Barbara County				Ventura County				Los Angeles County			
	1985	1989	1991 Forecast	Percent of Total[1]	1985	1989	1991 Forecast	Percent of Total[1]	1985	19899	1990 Forecast	Percent of Total[1]
Total All Industries	161.7	174.9	NA	95.6	287.4	349.8	386.3	94.8	3714.0	4,034.3	4,123.0	94.1
Construction	6.6	6.9	7.9	4.6	9.4	16.9	21.9	8.4	120.9	153.7	NA	3.6

[1] Taken over total labor force.

Source: State of California Employment Development Department Annual Planning Information, June 1990.

TABLE 4.9.6-3
1991 Permanent Housing Units

County/City	Total Housing Units
Santa Barbara County	138,783
Carpinteria	5,469
Isla Vista	5,573
Santa Barbara	36,260
Ventura County	231,715
Camarillo	19,352
El Rio	1,762
Fillmore	3,562
Moorpark	8,033
Oxnard	41,437
Piru	399
Santa Paula	8,177
Simi Valley	33,553
Ventura	37,553
Los Angeles County	3,187,100
Burbank	41,792
Carson	24,496
Compton	23,276
El Segundo	7,197
Florence	13,488
Glendale	72,416
Hawthorne	29,350
Huntington Park	14,602
Los Angeles	1,308,562
Lynwood	14,528
Manhattan Beach	14,736
San Fernando	5,928
Santa Clarita	44,385
Southgate	22,914
Willowbrook	8,538

Source: California Department of Finance. Demographic Research Unit, January 1, 1991.

Housing

Table 4.9.6-3 shows total housing units for the counties and communities adjacent to the pipeline routes.

4.9.6 FOUR CORNERS PIPELINE

The Four Corners Line 90 Pipeline is an existing pipeline which extends from Cadiz in San Bernardino County to Los Angeles. This alternative would only involve construction at selected locations in San Bernardino and Los Angeles counties. The construction employment characteristics are described in Table 4.9.1-3.

Cajon Wash to Whittier Narrows Dam (M.P.71 to M.P.123)

Following the junction of I-15 and Interstate 215 (I-215), the route is located parallel to the I-15, outside of the Caltrans easement, within private property, to the north of the freeway right-of-way. After Arrow Route, it turns south and follows the drainage easement of Dry Creek to Philadelphia Street, from where it follows surface streets through Ontario, Montclair, Pomona, City of Industry, South El Monte, Montebello, Pico Rivera to the Rio Hondo Flood Control channel below the Whittier Narrows Dam. Typically these urban streets are two lane minor collectors and arterial streets with few signalized intersections. Numerous commercial and residential driveways, curb gutter, and sidewalk facilities are located in this 31 mile section. Left turn lanes are provided at all major intersections. Parallel street curb parking exists along the route at several locations. The route also crosses access-controlled highways I-10, I-15, SR-19, SR-57, SR-60, I-605.

Whittier Narrows Dam to Carson (M.P.123 to M.P.142)

For the majority of the remainder of the route, the pipeline is located within the drainage easement of the Rio Hondo flood control channel and the Los Angeles River. The route leaves the Los Angeles River and parallels Carson Street, Alameda Boulevard and Dominguez Channel and enters the GATX Carson Terminal. The route also crosses access-controlled highways I-5, I-10, I-405, SR-91.

Existing Traffic Circulation Conditions

Circulation conditions are often described in terms of levels of service (LOS). The LOS scale ranges from A to F, with A indicating excellent traffic flow quality and E indicating the maximum capacity that a roadway can accommodate. When an intersection drops to an LOS of E, the speed of traffic is restricted and 71 to 100 percent of the signal cycles have one or more vehicles which wait through more than one signal cycle during peak traffic periods. A LOS of D is considered tolerable in urban areas, as during peak hours 31 to 70 percent of the signal cycles have one or more vehicles which wait through more than one signal cycle.[1] Table 4.10.1-2 provides LOS ratings based on the capacity and ADT of the roadway.

Existing traffic circulation and roadway operating conditions were compiled for representative intersections where pipeline construction may significantly affect traffic flow. A useful descriptor of street operating conditions is peak hour traffic flow. Peak hour traffic is typically 8-10 percent of average daily traffic (ADT) and usually corresponds to the morning and late afternoon commute periods. Table 4.10.1-3 shows the ADT and peak hour traffic volumes at critical intersections.

Affected Railroads

Both intercity passenger and freight rail services operate near the pipeline route. The proposed route parallels the Southern Pacific Railroad ROW for 21.4 miles in the cities of Ontario, Montclair, Pomona, and Carson. The route crosses rail lines on 16 occasions as shown in Table 4.10.1-4.

TABLE 4.10.1-1
Existing Transportation Facilities Paralleled or Crossed by the Cajon Pipeline Route

M.P.[1]	Road	Jurisdiction	Distance Parallel (miles)	Crossing Type[2]	Required Extra Work Space[3]
0.0-42.0	Unnamed	Bureau of Land Management	30.0	TRN	
14	U.S. Route 395	San Bernardino County	-	BORE	X
42	El Mirage Road	City of Adelanto	-	TRN	
42.0-45.2	Raccoon Avenue	City of Adelanto	2.0	TRN	
42.3	Rancho Road	City of Adelanto	-	TRN	
45.2-45.4	Cassia Road	City of Adelanto	0.2	TRN	
45.4-48.0	Koala Road	City of Adelanto	2.6	TRN	
48	Pearblossom Road State Route 18	San Bernardino County	-	BORE	X
48.0-56.0	Baldy Mesa Road	San Bernardino County	8.0	TRN	
54	Phelan Road	San Bernardino County	-	TRN	
56.0-73.0	Forestry roads	San Bernardino County	15.0	TRN	
60.2	Interstate 15 (southbound)	San Bernardino County	-	BORE	X
60.8	Interstate 15 (northbound)	San Bernardino County	-	BORE	X
63	State Route 138	San Bernardino County	-	BORE	X
63.8	Interstate 15	San Bernardino County	–	Directional Drill	X
73.0-83.5	Frontage Road/ Private Property	Fontana/ Rancho Cucamonga	13.0	TRN	
74	Sierra Avenue/ Lytle Creek Road	San Bernardino County	-	TRN	
78.0	Summit/24th St.	Rancho Cucamonga	-	TRN	
79.0	Cherry Avenue	Rancho Cucamonga	-	TRN	
79.6	Highland Avenue	Rancho Cucamonga	-	TRN	

TABLE 4.10.1-1
Existing Transportation Facilities Paralleled or Crossed by the Cajon Pipeline Route

M.P.[1]	Road	Jurisdiction	Distance Parallel (miles)	Crossing Type[2]	Required Extra Work Space[3]
80.5	Victoria Street	Rancho Cucamonga	-	TRN	
81.0	Base Line Road	Rancho Cucamonga	-	TRN	
81.7	Etiwanda Avenue/Miller	Rancho Cucamonga	-	TRN	
82.5	Foothill Boulevard	Rancho Cucamonga	-	TRN	
83.0	Day Creek Blvd. (fut)	Rancho Cucamonga	-	TRN	
83.2	Interstate 15	Rancho Cucamonga	-	BORE	X
83.5	Arrow Route	Rancho Cucamonga	-	TRN	
83.2-87.5	Day Creek Channel Flood control	Rancho Cucamonga/ Ontario	3.5	TRN	
84.7	4th Street	Rancho Cucamonga	-	TRN	
85.3	Interstate 10	Ontario	-	BORE	X
87.5-88.5	Philadelphia Street	Ontario	1.0	TRN	
88	Interstate 15	Ontario	-	UNDER	
88.5-88.7	Milliken Avenue	Ontario	0.2	TRN	
88.7-92.7	Mission Boulevard	Ontario	4.0	ROAD/TRN	
92	Vineyard Avenue	Ontario	-	TRN	
92.7-93.6	Ontario Boulevard	Ontario	0.9	TRN	
93	Grove Avenue	Ontario	-	TRN	
93.6-94.8	State Street	Ontario/Montclair	1.2	TRN	
94.2	Euclid Avenue	Ontario	-	SPN	
94.8-101.6	First Street	Ontario	6.8	TRN	
95.4	Mountain Avenue	Ontario	-	TRN	
96.5	Central Avenue	Montclair	-	BORE	X
98.5	East End Avenue	Pomona	-	TRN	
99.0	Reservoir Street	Pomona	-	TRN	

TABLE 4.10.1-1
Existing Transportation Facilities Paralleled or Crossed by the Cajon Pipeline Route

M.P.[1]	Road	Jurisdiction	Distance Parallel (miles)	Crossing Type[2]	Required Extra Work Space[3]
99.3	San Antonio Avenue	Pomona	-	TRN	
99.3	Palomares Street	Pomona	-	TRN	
100.2	Main Street	Pomona	-	TRN	
100.3	Park Avenue	Pomona	-	TRN	
99.5	Towne Avenue	Pomona	-	SPN	
100.1	Garey Avenue	Pomona	-	SPN	
100.6	White Avenue	Pomona	-	TRN	
100.8	Hamilton Boulevard	Pomona	-	TRN	
101.6-102.6	Mt. Vernon Avenue	Pomona	1.0	TRN	
102	State Route 71	Pomona	-	BORE	X
102.6-104.2	Pomona Boulevard	Pomona	1.6	TRN	
103	State Route 57	Pomona	-	UNDER	
104	Temple Avenue	Pomona	-	TRN	
104.2-107..5	Agricultural Land	Pomona/ City of Industry	3.2	TRN	
107.4-107.5	Brea Canyon Road	City of Industry	0.1	TRN	
107.5-108.0	Currier Road	City of Industry	0.5	TRN	
108.0-109.0	Business Parkway	City of Industry	1.0	TRN	
108.0-109.1	Fairway Drive	City of Industry	0.1	TRN	
109.1-110.0	San Jose Avenue	City of Industry	0.9	TRN	
110.0-110.2	Nogales Avenue	City of Industry	0.2	TRN	
110.2-112.4	Arenth Avenue	City of Industry	2.2	TRN	
112.4-113.2	Chestnut Street	City of Industry	0.8	TRN	
113.2-114.5	San Jose Flood Control channel	Los Angeles County	1.3	TRN	

TABLE 4.10.1-1
Existing Transportation Facilities Paralleled or Crossed by the Cajon Pipeline Route

M.P.[1]	Road	Jurisdiction	Distance Parallel (miles)	Crossing Type[2]	Required Extra Work Space[3]
114.5-114.7	Parriott Place	City of Industry	0.2	TRN	
114.5	Hacienda Boulevard	City of Industry	-	UNDER	
114.7-116.2	Don Julian Road	City of Industry	1.5	TRN	
116.2-116.5	7th Avenue	City of Industry	0.3	TRN	
116.5-117.5	Bonelli Street	City of Industry	0.5	TRN	
117.5-118.0	San Jose Flood Control channel	Los Angeles County	1.0	TRN	
118	Interstate 605	Los Angeles County	-	UNDER	
118.0-119.5	San Gabriel River	Los Angeles County	1.5	TRN	
119.5	Peck Road	Los Angeles County	1.5	TRN	
119.75	State Route 60	City of Industry	-	UNDER	
119.5-122.0	Durfee Road	South El Monte/ Los Angeles County	1.9	TRN	
122.0-122.4	San Gabriel Boulevard	Los Angeles County	0.4	TRN	
122	State Route 19	Los Angeles County	-	BORE	X
122.4-123.2	Lincoln Boulevard	Montebello	0.8	TRN	
123.2-131.7	Rio Hondo Flood Control channel	Los Angeles County	7.0	TRN	
124	Beverly Boulevard	Pico Rivera	-	UNDER	
125	Whittier Boulevard	Pico Rivera	-	UNDER	
126	Washington	Pico Rivera	-	UNDER	
126.3	Slauson Avenue	Pico Rivera	-	UNDER	
126.6	Telegraph Road	Pico Rivera	-	UNDER	
127	Interstate 5	Downey	-	UNDER	

TABLE 4.10.1-1
Existing Transportation Facilities Paralleled or Crossed by the Cajon Pipeline Route

M.P.[1]	Road	Jurisdiction	Distance Parallel (miles)	Crossing Type[2]	Required Extra Work Space[3]
128	Florence Avenue	Downey	-	UNDER	
129	Firestone Boulevard	South Gate	-	UNDER	
131.7-138.5	Los Angeles River	Los Angeles County	6.9	TRN	
130.3	Imperial Highway	South Gate	-	UNDER	
132	Rosecrans Avenue	Paramount	-	UNDER	
134	Atlantic Boulevard	Long Beach	-	UNDER	
135	Artesia Boulevard	Long Beach	-	TRN	
135	State Route 91	Long Beach	-	UNDER	
136	Long Beach Boulevard	Long Beach	-	TRN	
139	Interstate 710	Long Beach	-	UNDER	
139.5-140.4	Carson Street	Carson	0.9	TRN	
140.4	Southern Pacific RR	Carson	-	BORE	
140.4 - 141.5	Alameda Boulevard	Carson	1.1	TRN	
140.8	Interstate 405	Carson	-	BORE	X
141	223rd Street	Carson	-	UNDER	
141.5 - 142	Dominguez Channel	Carson	.5	TRN/BORE	
141.7	Sepulveda Blvd.	Carson	-	BORE	X

[1] Milepost range indicates that pipeline is parallel to or within right-of-way of designated road.

[2] ROAD = pipeline within right-of-way of paved or dirt road
SPN = pipeline spans bridge or channel
TRN = pipeline trenched across roadway
BORE = jack and bore under roadway
UNDER = pipeline trench within existing culvert or channel beneath roadway, and will not interrupt roadway

[3] Work space 100'X 250' maximum.

Source: EIP Associates, December, 1991.

TABLE 4.10.1-2
Design ADT Volumes for Road Classifications and Level of Service

Facility Type	Lane Configuration	Maximum Daily Vehicle Volumes by LOS A	B	C	D	E
Freeway	6-lane	44,000	74,400	88,800	99,900	111,000
	4-lane	29,600	49,600	59,200	66,600	74,000
Arterial	6-lane	22,240	37,600	44,880	50,490	56,100
	4-lane	14,830	24,930	29,920	33,660	37,400
	2-lane	7,410	12,530	14,860	16,830	18,700
Collector	2-lane	4,760	8,040	9,600	10,800	12,000
Local	2-lane	750	1,250	1,500	1,690	1,875

TABLE 4.10.1-3
Cajon Pipeline Traffic Impact Study
Existing Traffic Conditions

Street	Cross Street	1991 ADT	1991 Peak Hour	Lanes	Mid-block LOS
Mission Boulevard	Vineyard Avenue	22,808	1,474	4	B
Ontario Boulevard	Mission Boulevard	593	55	2	A
State Street	Euclid Avenue	2,519	250	2	A
First Street	Mountain Avenue	5,881	743	4	A
Pomona Boulevard	Temple Avenue	10,124	1,278	4	A
Seventh Avenue	Don Juan Road	27,926	2,221	4	C
Pelissier Place	Peck Road	13,865	1,171	4	A
Durfee Avenue	Rosemead Boulevard	13,369	1,723	4	A
Del Amo Boulevard	Alameda Street	43,645	4,365	6	C
Alameda Street	Carson Street	14,210	1,421	4	A

Note: ADT volumes were factored up to 1991 where necessary

Source: DKS Associates

TABLE 4.10.1-4
Railroad Crossings

M.P.	Railway
60.5	Southern Pacific
60.6	Southern Pacific
61.5	UP R.R. and AT&SF R.R.
63.0-63.4	UP R.R.and AT&SF R.R.
71.5	UP R.R.and AT&SF R.R.
80.5	Southern Pacific
83.7	AT&SF RR
85.4	Southern Pacific
88.6-92.7	UP R.R.
92.7-101.6	Southern Pacific and UP R.R.
101.6-102.6	Southern Pacific
102.6	Southern Pacific
104.2-104.4	Southern Pacific
104.6-107.4	LA & SL R.R.
114.0-114.5	UP R.R.
117.2-118.0	UP R.R.
118	UP R.R.
124	UP R.R.
117	AT&SF R.R.
117.4	Southern Pacific
130.2	Southern Pacific
131.7	UP R.R.
133.3	Southern Pacific
138.9	Metro Blue Line
140.4	Southern Pacific

[1] A milepost range designates the route is parallel.

[2] UP R.R. = Union Pacific Railroad Co.
AT&SF R.R. = Atchison, Topeka and Sante Fe Railroad Co.
Southern Pacific = Southern Pacific Transportation Co.
LA & SL R.R. = Los Angeles and Salt Lake Railroad Co.

Source: EIP Associates

4.10.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative runs south from 12-Gauge Lake for 1.5 miles and then southwest till it rejoins the proposed route at U.S. 395. The route parallels dirt roads for its 13 miles across the desert.

4.10.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative would result in two more crossings of the I-15 at M.P. 73 and M.P. 74. The 2 mile segment alternative would parallel an existing utility easement.

4.10.4 M-70 PIPELINE

The information in this section is summarized from the Draft Environmental Report Statement on the proposed M-70 Pipeline replacement and optimization project. A detailed list of parallel streets and street crossings is contained in Table 4.10.5-1. A general description of the affected roads and highways is provided below.

Affected Roads and Highways

I-5 Frontage, Castaic and Castaic Junction

Much of the northern portion of the proposed M-70 Pipeline route follows rural, two-lane, paved Interstate 5 frontage roads and unpaved utility easements within Kern County and the Los Padres and Angeles National Forests. The twenty-four hour traffic volume for these roads are typically less than 200 vehicles-per-day. Utility and U.S. Forest Service personnel, as well as recreational vehicles, use these facilities. Vehicle usage increases on the Old Road (Highway 99) between Castaic and Magic Mountain Parkway. The pipeline route crosses Interstate 5 four times in this segment.

SR 126 to San Fernando Road, Including the City of Santa Clara

The M-70 Pipeline route transitions from a rural transportation setting to a network of at-grade multi-lane conventional highways with paved shoulder. Regional and local truck traffic account for over 10 percent of the total traffic volume. Recreational traffic associated with the Magic Mountain theme park utilizes State Route 126 (SR-126) and parallels the Southern Pacific Railroad ROW within a portion of Santa Clarita. The route enters the City of Los Angeles along Sierra Highway, north of the Antelope Freeway (SR-14). The route crosses the Antelope Freeway at Sierra Highway.

TABLE 4.10.5-1
Existing Transportation Facilities (M-70 Pipeline)

Road	Jurisdiction	Distance Parallel (miles)	Number of Lanes
Lebec Road	Kern County	2.2	2
Peace Valley Road	Los Angeles County	0.6	4
I-5 frontage road	U.S. Forest Service/Los Angeles County/Private right-of-way/Caltrans	4.8	
I-5 frontage road and utility easements	U.S. Forest Service	4.4	2
Castaic and Lake Hughes Roads	Los Angeles County	1.0	2
The Old Road (U.S. 99)	Los Angeles County	3.3	Varies - 2 & 4 with striped median
Magic Mountain Parkway (SR 126)	Los Angeles County/Caltrans	1.1	2 & 4 lane conventional
Neighborhood streets	City of Santa Clarita	0.8	2
San Fernando Road (SR 126)	Caltrans	0.8	2-lane conventional with paved shoulders
Sierra Highway	Los Angeles County	1.5	2-lane conventional with paved shoulders
San Fernando Road	City of Los Angeles	0.6	2-lane with curb and gutter
Balboa Boulevard	City of Los Angeles	1.6	4-lane with curb parking
Rinaldi Street	City of Los Angeles	0.5	4 lanes, striped bike lane, curb parking
Woodley Avenue	City of Los Angeles	7.5	4 lanes with bike lane and curb parking
Victory Boulevard	City of Los Angeles	0.6	6 lanes, restricted curb parking
Sepulveda Boulevard	City of Los Angeles City of Culver City	5.7 0.4	4 & 6 lanes 4 lanes
Culver Boulevard	City of Culver City	0.1	4

TABLE 4.10.5-1
Existing Transportation Facilities (M-70 Pipeline)

Road	Jurisdiction	Distance Parallel (miles)	Number of Lanes
Sawtelle Boulevard	Cities of Los Angeles and Culver City	0.16	2
Slauson Avenue	Culver City	0.1	6 lanes with raised medians
Hyde Park/Ash Street	City of Inglewood	0.2	2
Queen Street	City of Inglewood	0.2	2
Inglewood Avenue	City of Inglewood, County of Los Angeles, City of Hawthorne	2.2	2 & 4
142nd Street	City of Hawthorne	0.6	2
Prairie Avenue	City of Lawndale/City of Torrance/Los Angeles County	1.7	4 lanes with curb parking

San Fernando Road - Torrance Refinery (Metropolitan Los Angeles)

The transportation network affected by the M-70 Pipeline consists of multi-lane city arterial and collector/distributor streets with signalized intersections located at approximately one-quarter mile intervals. Numerous commercial and residential driveways, curb, gutter, and sidewalk facilities are located in this 40-mile section. Left-turn lanes are provided at all major intersections. Continuous striped left-turn lanes are also located along most sections of arterial streets. Parallel street curb parking (some restrictions) exists along the route except for the Sepulveda Boulevard section in the City of Los Angeles through the Santa Monica Mountains. The route also crosses access-controlled highways: SR-118, I-405, U.S. 101, I-10 and SR-90.

Existing Traffic Circulation Conditions

Existing traffic circulation and roadway operating conditions were compiled for representative intersections where pipeline construction may significantly affect traffic flow. A useful descriptor of street operating conditions is peak hour traffic flow. Peak hour traffic is typically 8-10 percent of average daily traffic (ADT) and usually corresponds to the morning and late afternoon commute periods. Table 4.10.2-2 shows the ADT and peak hour traffic volumes at critical intersections.

Affected Railroads

Both intercity passenger and freight rail services operate near the M-70 Pipeline route. The proposed route parallels railroad rights-of-way and crosses rail lines in several locations in the analysis segments.

Segment 1

Adjacent to Castaic Junction the proposed route crosses the old Santa Paula branch of the Southern Pacific Railroad (SPRR). Service in this branch has been discontinued by SPRR and sold to Newhall Land and Farming Company. The route would be located along 0.5 mile of the old right-of-way in this section.

Section 2

The route crosses the at-grade crossing along San Fernando Road at approximately M.P. 43.3 and occupies Southern Pacific Railroad right-of-way for 0.3 miles in Santa Clarita. Immediately south of the tunnel junction at San Fernando Road, the pipeline also crosses and would occupy 0.3 mile of Southern Pacific Railroad right-of-way. Approximately ten trains operate daily on the Southern Pacific Railroad Coast Line.

Segment 3

In Van Nuys, adjacent to the Van Nuys Airport, the pipeline route crosses the Southern Pacific Railroad tracks on Woodley Avenue, south of Roscoe. Fourteen freight and four passenger trains operate daily on this line. The preferred route also crosses the SPRR Burbank Branch at Sepulveda Boulevard, south of Victory Boulevard. Three trains a week operate on this line. In the cities of Inglewood and Hawthorne, the route alignment crosses the Harbor Line of the Southern Pacific Railroad and the Atchison, Topeka and Santa Fe (AT&SF) railroads.

TABLE 4.10.5-2
Existing Traffic Conditions (M-70 Pipeline)

Street	Cross-street	1990 ADT and Peak Hour Volume		
		ADT*	Peak Hour	LOS**
San Fernando Road (SR 126)	S/O Magic Mountain Parkway	25,000	2,000	F
Woodley Avenue	Roscoe Boulevard	27,000	3,200	E
Woodley Avenue	Sherman Way	23,000	2,200	E
Woodley Avenue	Vanowen Street	37,000	4,600	F
Sepulveda Boulevard	Route 101 (Ventura Freeway)	40,000	3,000	E
Sepulveda Boulevard	Wilshire Boulevard	33,000	3,100	F
Sepulveda Boulevard	Santa Monica Boulevard (SR 2)	30,000	2,500	F
Sepulveda Boulevard	S/O Wilshire Boulevard	35,000	3,300	F
Sepulveda Boulevard	Pico Boulevard	29,000	2,400	F
Sepulveda Boulevard	Olympic Boulevard	30,000	2,300	F
Sepulveda Boulevard	N/O I-10 (Santa Monica)	22,000	2,600	F
Sepulveda Boulevard	S/O I-10 (Santa Monica)	38,000	3,600	F
Sepulveda Boulevard	National Boulevard	30,000	2,600	E
Sepulveda Boulevard	Slauson Avenue	40,200	3,470	E
Inglewood Boulevard	S/O Arbor Vitae	14,000	1,200	E
Prairie Avenue	182nd Street	47,000	4,400	F

Note:

ADT = Average Daily Traffic (all volumes rounded)
LOS = Level of Service
N/O = North of
S/O = South of

* Year 1990 volume estimates were derived by applying a 2 percent annual traffic growth rate to the most recent traffic count.

** Measures of LOS were estimated for peak hour based on lane configuration and through volumes at signalized intersections.

*** Estimated

4.10.5 PACIFIC PIPELINE

The Pacific Pipeline System proposes a 170-mile pipeline, 133 miles of which will be built in active Southern Pacific Railroad ROW. The other segments will include 11.5 miles of existing 22-inch pipeline through Ventura, 10 miles of public road ROW along State Highway 126 near Piru and The Old Road parallel to I-5, 11 miles of abandoned railroad ROWs between Piru and The Old Road west of Santa Clarita, and 3.3 miles along Alameda Street in downtown Los Angeles where an abandoned rail line exists and 4.5 miles of none-ROW areas.

Affected Roads and Highways

The Pacific Pipeline route crosses and parallels many roadways. Some of the major roadways which would be crossed include: U.S. 101, SR-126, I-5, SR-118, SR-134, SR-2, and the Santa Monica Freeway (I-10). Some of the major roads which the pipeline would closely parallel include: U.S. 101, SR-126, the Old Road, San Fernando Road, and Alameda Street.

Gaviota to Goleta (M.P. 0 to M.P. 18)

This segment is predominantly rural in character and would be built within the active Southern Pacific Railroad ROW. The route would parallel U.S. 101 for most of this segment, varying from immediately adjacent to the ROW to over 3,000 feet away at one point.

Gaviota to Montecito (M.P. 18 to M.P. 35)

This segment would be within the active Southern Pacific Railroad ROW. It is predominantly urban in character with low to moderate population densities. The route would be parallel and adjacent to U.S. 101 except for three deviations of up to 1,500 feet for less than 4 total miles of the pipeline. Numerous streets cross the railroad ROW and provide access to local commercial, industrial, and residential areas.

Montecito to Ventura (M.P. 35 to M.P. 61)

This segment would parallel the Pacific coast and lie within the Southern Pacific Railroad ROW except where existing 22-inch pipeline would be used. It would then parallel the Southern Pacific Railroad ROW to the U.S. 101 overpass in Ventura, continue to San Pedro Street and then west to Pierpont Boulevard. At Pierpont Boulevard the new pipeline would resume and would parallel U.S. 101 through agricultural land for 1.5 miles until U.S. 101 intersects the Southern Pacific Railroad ROW. In Carpinteria, as in Santa Barbara, several streets cross the ROW and provide access to residential, recreational and industrial areas.

Ventura to Piru (M.P. 61 to M.P. 92)

This segment would follow the active but lightly used Santa Paula Spur of the Southern Pacific Railroad. The land use along this segment is primarily agricultural, and as is common in agricultural areas, this route segment is crossed by a fairly extensive network of local access roads. The proposed route passes through the communities of Saticoy, Santa Paula, Fillmore, and Piru, and would be roughly parallel to SR-126. The primary highway for this area, SR-126, crosses the proposed route four times in this segment. In the small communities along the route, numerous streets that provide access to residential and commercial areas are crossed.

Piru to Sylmar (M.P. 92 to M.P. 114)

This segment would follow abandoned railroad ROW for about 11 miles, the shoulder of SR-126 for 3 miles between M.P. 97 and M.P. 100, and the shoulder of The Old Road, a public highway ROW, for approximately 4 miles. From Castaic Junction, the route turns south and parallels The Old Road and I-5 to the intersection of SR-14. The pipeline would follow active Southern Pacific Railroad ROW south from this junction at Sylmar. Between Piru and Castaic Junction, numerous rural access roads from SR-126 cross the proposed route.

Sylmar to Cornfield Yard (M.P. 114 to M.P. 140)

This segment is intensely urbanized. The proposed route would be within the active Southern Pacific Railroad ROW adjacent to San Fernando Road for approximately 20 miles to the Southern Pacific Railroad Taylor Yard in Los Angeles. From Taylor Yard, the route crosses the Los Angeles River to the Cornfield Yard. Numerous streets cross the proposed route and provide access to industrial, commercial, and residential areas.

Cornfield Yard to 25th Street (M.P. 140 to M.P. 143.5)

This segment would pass through downtown Los Angeles along Spring and Alameda streets. This segment is an intensely urbanized area, with numerous streets that cross the proposed route and provide access to commercial and industrial areas.

25th Street to Wilmington (M.P. 145.5 to M.P. 159)

This segment would be within active Southern Pacific Railroad ROW. The rail lines are located within a median between East and West Alameda streets. This segment is heavily urbanized. Numerous streets cross the ROW and provide access to commercial and industrial areas.

Affected Railroads

The project will follow the Southern Pacific Railroad Coast Line from Gaviota to the existing 22-inch pipeline at Sea Cliff. The existing 22-inch pipeline parallels the railroad through Ventura. The Coast Line carries both passenger and freight traffic with one AMTRAK train per day in each direction and seven regularly scheduled freight trains per day. In addition, there may be other scheduled freight trains on the line in peak demand periods. From Ventura, the project will follow the Southern Pacific Railroad Santa Paula branch to Piru. This spur carries only freight traffic, and it is very lightly traveled, carrying only one train per week even during the peak citrus harvest season. The project leaves active railroad ROW at Piru, rejoining the Saugus Line near the junction of I-5 and SR-14. The rail line along the proposed pipeline from this junction to the Taylor Yard vicinity, parallel to San Fernando Road, carries an average of eight freight trains per day. The proposed pipeline route from Taylor Yard proceeds south through the Cornfield Yard area, which is mainly used for storage of rail cars, and along Spring and Alameda Streets to 25th Street, but no trains use this segment. The rail line south of 25th Street, from the "J" Yard, along Alameda Street, carries an estimated 14 to 20 trains per day, all freight. A second Southern Pacific Railroad rail line, the Wilmington Route, parallels the Alameda Street route and follows the Blueline Commuter System.

4.10.6 FOUR CORNERS PIPELINE

The Four Corners Line 90 Pipeline extends 185-miles from Cadiz, San Bernardino County to Los Angeles. The existing pipeline route crosses the I-10 and SR-62 and SR-15 and major and minor streets within the urban areas of Yucca Valley, Beaumont, Banning, Riverside, Corona, and Anaheim.

ENDNOTES

1. Highway Capacity Manual. Highway Research Board Special Report 87, 1965.

4.11 CULTURAL AND PALEONTOLOGICAL RESOURCES

4.11.1 CAJON PIPELINE

ARCHAEOLOGICAL RESOURCES

A cultural resource reconnaissance survey of the proposed Cajon Pipeline corridor was conducted by McKenna et al., Whittier, California, from June through September, 1992. This section summarizes the details of the methods, background, findings, and recommendations of the attached technical report (see Technical Appendix III).

A review of the files at the San Bernardino County Museum Archeological Information Center, and University of California, Los Angeles, was completed for the San Bernardino and Los Angeles portions of the corridor respectively. Conducted in conjunction with the survey, the research included supplemental investigations at the Bureau of Land Management, Riverside; USFS, San Bernardino; the San Bernardino County Archives, San Bernardino; and the local libraries, as needed. These studies provided data on known and potential resources along the corridor route, including peripheral resources, and allowed a more intensive evaluation of identified resources.

The boundaries of the survey differed in three ways: 1) within BLM lands north of the Cajon Pass, a 120 foot corridor was required; 2) within U.S. Forest Service lands, the survey varied from 300 feet to 500 feet wide, depending on the presence/absence of roads, railroads, or stream crossings; 3) and within the urban lands of southwestern San Bernardino County and all of Los Angeles County, the corridor rarely provided more than a 100 foot right-of-way.

McKenna et al. investigated the entire route within San Bernardino County and spot checked areas of access within the Los Angeles route.

Cultural Background

Ethnographic Background

Ethnographically, all areas of the proposed pipeline are associated with one or more Native American groups. In general, however, only two ethnographic populations are represented, the Gabrielino of the coastal plain and the Serrano of the Cajon Pass and desert environments. These populations are related by similar linguistic affiliations traced to Shoshonean roots. The Shoshonean speakers represent a broad population ranging across western North America, from as far north as Montana and Idaho to Panama. Archaeological data suggests that the Shoshonean intrusion into Southern California occurred between 1500 and 3000 years ago, resulting in a change in the material cultural of the native populations and representing itself in a broad and widely misunderstood period known as the Intermediate Cultural Horizon. Prior to the Intermediate Horizon, the Southern California populations identified along the coast were represented by the Early Man Horizon and the Milling Stone Horizon. The Late Prehistoric, following the Intermediate Horizon, was followed by the period of contact with European explorers in the mid-1500's.

Among the desert cultures there is a somewhat different cultural chronology. The desert culture has its own chronological sequence and differing patterns of environmental exploitation, though both groups share other traits.

The Gabrielino

The reference to the Gabrielino comes from the association of the Southern California populations to the Mission San Gabriel de Archangel, located within the present-day community of San Gabriel in Los Angeles County. Prior to contact, the Gabrielino referred to themselves as the Tongvan, a reference to a large and central village near present-day Los Angeles. Many Gabrielino prefer the term Tongvan to Gabrielino.

At the time of contact, the Gabrielino occupied an area ranging from northern Los Angeles County to Aliso Creek in Orange County, and between the San Gabriel Mountains and the coast. They also occupied the Channel Islands off California, having established a seafaring technology during the Late Prehistoric Horizon. The Gabrielino established relatively complex social, religious, and political organizations.

The predominant food source for the Gabrielino of the inland valleys (the current project right-of-way) included acorns, sage, yucca, and deer. Extensive acreage of natural sage can still be found in north Etiwanda, relatively close to the Gabrielino/Serrano territorial boundary.

Coastal populations relied on shellfish and marine species common on sandy beaches and offshore kelp beds. Settlement patterns suggest permanent village sites organized around clan occupation. Temporary camps were usually inhabited by smaller family groups and associated with local (seasonal) resources.

Primary habitation sites generally consisted of up to one hundred individuals, with few consisting of up to two hundred individuals. Trade radiated in all directions, including the Channel Islands to the west and into the Mojave Desert, the Cajon Pass being a major artery for trade for hundreds of years. With exchange traced to areas far north (Chumash) and into Arizona, the Gabrielino acquired many exotic items, such as obsidian and differing pelts and foodstuffs.

European contact with the Gabrielino occurred in 1542 with the exploration of Juan Rodriguez Cabrillo. This contact was limited, however, prior to the Missionary expeditions of the 1770's when the Padres and soldiers made direct contact up Baja California and well into Alta California. The mission San Gabriel de Archangel was founded in 1771 (relocated a few years later to the present site). During the Mission

Period, the Gabrielino were slowly drawn into the economic sphere of the Mission. By 1880, the majority of the population was assimilated into the Mission system. Many others died of introduced disease or fled the area to avoid acculturation.

The Serrano

The Serrano Indians, a reference to the Spanish association with the mountains, are known to have occupied the territories between the Cajon Pass of the San Gabriel/San Bernardino Mountains to areas as far north as Barstow. Within the current project area, the "Serrano" association is in reference to two of the various Serrano groups: the Serrano proper of the mountains and foothills, and the Vanyume of the desert floor. Although the desert is considered by most to be a harsh environment, prehistoric man, present in limited numbers, found ample resources and fresh water and survived in the area for hundreds of years.

The Serrano in limited numbers practiced a hunting and gathering subsistence strategy, focusing mainly on the procurement of seasonal foodstuffs. This system, therefore, required mobility and the ability to survive in various environmental niches. Settlement size, location, and the degree of mobility varied with the environment. Larger, more sedentary, habitation sites are generally located along middle elevations (foothills), where fresh water and resources were more extensive. Here, the resources varied from relatively large game animals (e.g. deer, mountain sheep, antelope) to various smaller animals (e.g. rabbits and birds). Vegetation included various forms of acorn, nuts, and roots.

In lower elevations mobile hunters and gatherers followed or sought resources of the season. These resources varied from cacti fruit, beans, bulbs, gourds, and small game (e.g. rabbits and lizards).

The earliest documented historical reference to native populations within the Serrano territory is derived from the diaries of Father Francisco Garces. In 1776, Garces followed the Mojave Trail, upon which he reported the presence of numerous settlements and encampments within the Mojave drainage (which originates in the heart of Serrano territory in the San Bernardino Mountains).

In 1806, Father Jose de Zalvidea visited the village of Muscupiabit, a Serrano village located within the Cajon Pass (CA-SBR-425). Rancho Muscupiabe is named for this site. In 1819, the Redlands Asistencia was established to serve the populations of the Cajon Pass and western San Bernardino County. With the establishment of the Asistencia, many Serranos moved to the western side of the Cajon Pass.

Historical Background

Much as the Cajon Pass separates the Serrano from the Gabrielino, the Pass also separates two differing historic settlement patterns. The introduction of the Mission system along the Southern California coastal areas changed the lifeways of the Gabrielino considerably. By contrast, the Serrano were not impacted to a great extent until later years.

The Mission system began to decline dramatically with secularization in 1834. With the end of Spanish Rule, the Mexican government proceeded to push settlements of Mexican populations from the south by deeding large grants to individuals who promised to employ settlers. Small villages were established on some ranchos, while small towns appeared in areas between ranchos. Many of the ranchos hired Mission Indians trained to herd cattle and do household chores.

As early as 1827, Anglo-Americans were migrating into Southern California. Jedediah Smith crossed the Mojave Trail in 1827, passing through the Cajon Pass and opening the western route to others. In the decades to come, California would be taken by the United States with the close of the Mexican-American War. The Gold Rush of 1849 would see hundreds flooding into Southern California. Many of these individuals came through the Cajon Pass, the major east/west route through the mountains.

By 1850, the United States began questioning the rights of the large grant holders, wishing to open California to homesteading in the early 1860's. All Spanish and Mexican grants were questioned and the owners had to prove ownership. While many grants were confirmed, the acreage was often reduced or the subsequent taxes and costs of operation resulted in the loss to more affluent Americans.

Mining in the Mojave Desert became very important in the 1860's. It was not until the 1860's that large portions of Serrano territory were invaded by the Anglo-Americans. The Serrano were moved to reservations to the south and east, leaving the Mojave Desert wide open for settlement either as homesteads, mining claims, or out-right purchases from the U.S. Government.

Settlements were established along the many historic roads developed between 1860 and 1899; the railroad completed the crossing through the Mojave Desert to San Bernardino and Los Angeles (ca 1885); and ranching became a relatively large enterprise in the desert. The Mojave Road became a well-travelled route.

As the years went on, the San Gabriel and San Bernardino valleys continued to grow as populations crossing the Mojave Desert regularly. Spurred by improvements in transportation, real estate, and water, the California coastal plain became an agricultural center, specializing in citrus, but involved in numerous enterprises. The development of petroleum, improvements to harbors, and the continued growth and organization of the agriculturists resulted in the continued growth of the area which has, to date, resulted in the replacement of agriculture with full-scale residential communities with all the benefits of a metropolitan/suburban civilization.

Archaeological Background

Literature and Archival Review

The literature and archival review involved the studies of documents located in various repositories throughout Los Angeles and San Bernardino counties. As noted earlier, McKenna et al. completed extensive archaeological record checks at the San Bernardino County Museum and University of California, Los Angeles, Archaeological Information Centers. In addition, McKenna et al. conducted research at the San Bernardino National Forest offices in San Bernardino; the San Bernardino County Archives; the Bureau of Land Management, Riverside; and various libraries.

There have been forty-two studies completed in the Los Angeles County along the Cajon Pipeline route and another ninety-five studies along the San Bernardino County route, including U.S. Forest Service studies. In addition to the project specific reports, numerous overviews have also been completed.

Los Angeles County

The studies within Los Angeles County yield a total of sixteen sites peripheral to the pipeline corridor. No sites were found to be within the boundaries of the alignments, though two border the right-of-way. Of the sixteen sites, only one was identified as historic. The remaining fifteen were various types of prehistoric remains.

While only two prehistoric sites were identified near the project right-of-way, their presence is not representative of the use for the area. On the contrary, numerous prehistoric sites are known to have been destroyed during the historic period - via natural and cultural causes. Many of the areas included in the project right-of-way were developed long before archeological surveys were conducted. Likewise, sites are believed to be buried along the many water courses which flow through the San Gabriel Valley.

San Bernardino County

In San Bernardino County, the archeological records check identified 52 known prehistoric sites. The San Bernardino County Museum rated the project area High for prehistoric and historic resources. The resources listed in the archaeological records check were narrowed to more reasonably reflect the proposed right-of-way and the area of potential effect.

The majority of the sites reported were of historic origin. They consisted primarily of historic roads, water features, and material scatters. The remaining prehistoric sites were sparse lithic scatters with little to no significance. The occasional sites of size and artifact yield have shown, none-the-less, that the Cajon Pass and Mojave regions were routinely utilized by both Native American and historic populations.

In addition to shallow surface deposits, areas within San Bernardino County are known to reflect a high probability for buried deposits. This is certainly the case in the regions surrounding the Cajon Pass, where the nearby mountains have been eroding for centuries and depositing as much as one meter of sedimentation every 100 years. Areas of such deposition may require monitoring at various degrees of intensity, depending on the location and depths of excavation.

Field Investigation

The field investigations for the Cajon Pipeline project were completed from June through September, 1992, by McKenna et al., Whittier, California. The field studies were completed by a crew of three trained archaeological surveyors who spent a total of ten days in the field. They surveyed corridor widths which varied from less than 100 feet to over 500 feet, depending on the area in question. Private properties or fenced parcels were not investigated, though some private, yet open, areas were surveyed.

Access and surface visibility problems made certain areas of the route difficult to survey (e.g.high grasses along Interstate 15 in the north Etiwanda area). Other areas were wide open and easily accessible. While the urban areas were investigated mainly by vehicular access, the areas within San Bernardino County (including U.S. Forest Service lands and Bureau of Land Management lands) were surveyed via pedestrian survey. For the most part, parallelling transects of no more than fifteen meters were used to cover open terrain. Spot checking was completed in areas of recent studies reported by the archaeological records check. In other areas, the terrain was followed within the right-of-way, to insure safety and coverage. Overall, the entire route within San Bernardino County was visually inspected.

Sites (and isolates, if possible) located within or adjacent to the project corridor were relocated and reassessed for current conditions. Updated archaeological site forms have been prepared, which reflect McKenna et al. conclusions presented in the Technical Appendices.

Survey Results

As a result of the recent investigations, the remains identified during many previously completed studies have been assessed and, in most cases, have resulted in a redefinition of the extent of the sites. With respect to the prehistoric sites, most consisted of naturally occurring jasper and chert lithic materials which can be found throughout the Mojave Desert, north of Adelanto.

McKenna et al. identified 56 resources which are inside the Area of Potential Effect. For ten of these resources within the Cajon Pipeline Area of Potential Effect McKenna et al. recommends additional attention (Table 4.11.1-1). Of these, one is in Los Angeles County and nine are in San Bernardino County. The resources within San Bernardino County include two resources on BLM lands and another seven on USFS lands. A summary description of each site is presented below.

CAL-LAN-1046

CA-LAN-1046 is one of three sites recorded by Colquehoun in 1979. At that time, the extent of the materials was identified as consisting of both prehistoric and historic remains near the intersection of Azusa Avenue (Pass and Covina Road) and Valley Boulevard. The current conditions of this site are unknown because the site area has been reported to be buried under more recent development (residential and commercial).

TABLE 4.11.1-1
ARCHAEOLOGICAL RESOURCES WITHIN THE CAJON PIPELINE AREA OF POTENTIAL EFFECT REQUIRING ADDITIONAL INVESTIGATION

Site Number	Description
CA-LAN-1046	Prehistoric/historic habitation site
CA-SBR-2257	Prehistoric quarry
CA-SBR-7086	Prehistoric lithic scatter
CA-SBR-4252H	Old Baldy Mesa Road
CA-SBR-6793H	Railroad crossing
CA-SBR-7093H	Railroad and vehicle bridges
P1333-10H	Cozy Dell complex
P1333-12H	Pioneer Monument
P1333-13H	Historic wall alignments
McKenna #3	Railroad crossing

One informant identified this area as yielding burial remains, indicating a serious concern for sensitivity. Limitations to access and visibility have prohibited evaluation of this site during the recent investigations, and therefore, McKenna et al. recommends that a determination of eligibility be deferred until such time as an evaluation is possible.

CA-SBR-2257

CA-SBR-2257 is identified by McKenna et al. as a relatively large quarry site extending from the southern boundary of the Kramer Junction Quadrangle into the northern boundary of the Red Buttes Quadrangle. In 1971, Smith identified this site as a quarry/workshop at the "first cut in the road through the hills". In 1989, Hampson et al. revisited this area and completed an updated site description emphasizing the remains as they related to his particular project area. At the time, Hampson referred to the site as a sparse lithic scatter along Highway 395. Hampson et al. (1989) conducted a testing program within the site (limited to within his project area) and reported the site to be largely intact.

Citing data on file and made available through the Bureau of Land Management, CA-SBR-2577 has been evaluated by McKenna et al. for potential eligibility to the National Register of Historic Places. In November of 1989, the Office of Historic Places determined that CA-SBR-2577 was not an eligible site. The Office of Historic Preservation also noted, however, that a large site like CA-SBR-2577 may yet contain significant elements and, therefore, has recommended that additional investigators working in the area be aware of the potential for additional and potentially eligible resources.

The portion of CA-SBR-2257 within the present study was revisited. While aware of the presence of the large site and despite attempts to locate cultural remains, no evidence was found that elements of CA-SBR-2257 are within the current Area of Potential Affect (APE). As a result of the negative findings, and in concurrence with the Bureau of Land Management, that portion of CA-SBR-2257, which is within the current APE., is found to be an ineligible property.

CA-SBR-7086

CA-SBR-7086 (CP-17) was recorded by Hampson et al. as a relatively dense scatter of jasper, chert, basalt, and quartzite, indicating the presence of a quarry (T7N, R5W, Section 31). In reassessing this site, McKenna et al. determined that the deposits, non-cultural and cultural, have virtually no depth. The lithics were confined to the shallow deposits making up the desert pavement. The artifacts appear to have been carried down to this location along the east facing fan; having accumulated in the site area as a result of the topography.

McKenna et al. feel that the presence of numerous formal tools and source materials carried by an aluvial process could present an opportunity to investigate the procurement and technological production of such lithic tools in the Mojave Desert. Therefore, even without significant depth, this site has been recommended by McKenna et al. to be an eligible site under Criterion (d) of the Section 106 guidelines.

CA-SBR-4252H

This site is the historic alignment of Baldy Mesa Road (including Old Baldy Mesa Road), recorded by Reynolds in 1980 and 1986, parallels a significant portion of the project APE. Initiating at the Highway 138/Interstate 15 interchange and proceeding north to Pearblossom Road (and as far north as Koala Road), this road has already been impacted by various road improvements, grading, and buried utilities. The surface of the route has lost much its integrity. In recent years, this alignment has also been used and maintained as a U.S.F.S. Road.

Although this is an historical alignment, previous disturbances along the route have already impacted its integrity and, since there are no specific sites or resources identified within the road alignment and the road alignment itself is no longer indicative of the historic road alignment. Therefore McKenna et al. recommends that this area be consistently considered ineligible for the National Register of Historic Places.

CA-SBR-6793H

CA-SBR-6793H, a railroad alignment, was recorded by Lerch in 1990 and again by McKenna in 1992. In 1992, McKenna et al. re-recorded this portion of CA-SBR-6793H. The bridge crossing has been identified as a 1931 bridge with signs of maintenance dating to 1961.

In analyzing the various pieces of information for this site, McKenna et al. determined that the early tracks were remnants of the historic ca. 1885+ siding through the Cajon Pass. Over the years, this portion of tracks was repeatedly damaged or destroyed and numerous episodes of rebuilding were completed.

More recently, the tracks along this stretch of the railroad have been upgraded as the track is still quite active. The historic siding is in situ, but off to the side. McKenna et al. has determined that these tracks are the last remnants of the historic alignment and, therefore, McKenna et al. recommends that railroad alignment and bridge be considered eligible for the National Register of Historic Places Criterion (a), representing the development of railways across the Mojave Desert and connecting the California coast with the continental U.S. with a land route (replacing sea routes).

CA-SBR-7093H

Hampson et al. recorded CA-SBR-7093H (CP-25H) as an historic bridge site consisting of two paralleling bridges: one vehicular and one railroad; the vehicle bridge dating to 1930 and located along Old Cajon Road and the railroad bridge dating to 1939 and supporting double tracks.

In the case of the vehicle bridge, the bridge is one of the last of its design in this area, exhibiting the cement arches and ornate design indicative of the 1930s. The other bridges along this alignment were replaced in the 1950s and do not reflect this design, giving added significance to this one bridge span. Therefore, McKenna et al. has concluded that this structure would not meet the minimum requirements for eligibility under Federal guidelines.

P1333-10H

Associated with the historic complex at Cozy Dell, this is the reported site of an early stage station, mining camp and ranch. The San Bernardino County Museum Archaeological Information Center is currently completing the archaeological Site form(s) for this area. McKenna et al. defers to the museum and the museum has completed no formal evaluation of this site. Identified as an early ranching complex in the Cajon Pass (and in the San Bernardino National Forest), Cozy Dell has a potential to yield data on the ca. 1880s-1920s (and later) use of this area within the Pass.

P1333-12H

This location was recorded by Hampson et al. in 1991 as an isolated find. This monument (ca. 1917) commemorating the Early Pioneers, has been recommended by McKenna et al. to be considered an eligible resource.

P1333-13H

Hampson et al. (1991) recorded these standing features as an isolate. The pending site number reflects the presence of two segments of rock walls and the associated alignment of Old Cajon Road. The construction of these walls is still in question. No data was found by McKenna et al. in the San Bernardino County Road Books, and the Road Department could not readily provide data, suggesting it was a federally overseen project (WPA). No recommendation on elegibility was made by McKenna et al.

MCKENNA ET AL. NO. 3

McKenna et al. No. 3 is an historic railroad bridge identified within the San Bernardino National Forest, on Old Baldy Mesa road and approximately 0.4 miles south of CA-SBR-6793H. This bridge is directly along the Cajon Pipeline Corridor and, as a ca. 1931 bridge, represents yet another component of the extensive rail system constructed within and throughout the Cajon Pass.

This bridge is not unique, but is one of a few features that survived the flooding of the mid- to late-1930s. Therefore, this bridge is considered by McKenna et al. to be an eligible property under Criterion (a) of the Federal requirements for eligibility; representative of a significant event associated with broad patterns in our history.

PALEONTOLOGICAL RESOURCES

Paleontological resources are discussed separately from archaeological resources because study of the former examines the natural resources from specific geological time periods while study of the latter is a study of man-made artifacts from more recent time periods. Paleontological resources included in this report are the mineralized skeletons and shells of marine, fresh and brackish water animals preserved within the sediments. These represent a nonrenewable resource of scientific and educational value. Fossils provide essential information on the history of life and evolution of each group of organism, on the reconstruction of the paleoenvironment, and on assigning time periods to the disposition of the rock in which they occur. Fossils have also been used to ascertain the amount of lateral movement along fault lines.

There is no universally accepted definition for a significant scientific paleontologic resource. A definite determination can only be made by a qualified, trained paleontologist. Using the following guidelines, a paleontologic resource is of significant, scientific and educational value if it:

1. Provides important information of the evolutionary trends among organisms, relating living inhabitants of the earth to extinct organisms.
2. Provides important information regarding development of biological communities or interaction between botanical and zoological biotas.
3. Demonstrates unusual or spectacular circumstances in the history of life.
4. Is in short supply and in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and is not found in other geographic locations.

Vertebrate fossils are almost always highly significant because they occur in such low abundance, and each provides so much scientific information. Invertebrate, plant and microfossils tend to occur in much

The sensitivity of paleontological resources of an area to disturbance is judged on the quality of preservation and their abundance. In some instances, disturbance of fossiliferous rocks can expose paleontological material that would not otherwise be available to professional research scientists and institutions. Accepted sensitivity ratings for rock units are as follows:

High Potential: Sedimentary units with a high potential for containing significant nonrenewable paleontologic resources are rock units within which vertebrate fossils or significant invertebrate fossils have been found by previous studies to be present or likely to be present. These units include, but are not limited to, sedimentary formation which contain significant nonrenewable paleontologic resources anywhere within their geographic extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils. High sensitivity includes not only the potential for yielding abundant vertebrate fossils, but also for production of a few significant fossils, large or small, vertebrate or invertebrate, that may provide new and significant taxonomic, phylogenetic, and/or stratigraphic data. Areas which may contain datable organic remains older than Holocene, including Neotoma middens, and areas which contain unique new invertebrate deposits, traces, and/or trackways are also considered to be significant.

Low Potential: Specific areas or rock units not meeting with the criteria of high potential.

A paleontological study was completed by the San Bernardino County Museum. Paleontologic site records and collections were reviewed, contact was made with institutions maintaining paleontologic data relative to the study area. These institutions included the Department of Geologic Sciences, University of California, Riverside,; the Section of Vertebrate Paleontology, Natural History Museum of Los Angeles County (also housing the records of the California Institute of Technology); and the Regional Paleontologic Locality Inventory at the San Bernardino County Museum, Redlands.

This information was used to assess sensitivity of rock units along the right-of-way according to the criteria summarized above. The results of this survey are summarized in Table 4.11.1-3 and in complete form in Technical Appendix IV.

4.11.2 KRAMER SEGMENT ALTERNATIVE

Portions of the Kramer Segment Alternative between M.P. 0 and M.P. 25 were surveyed by McKenna et al., Whittier California during June and July 1992, as a portion of the original field work performed for the project. The Kramer Segment Alternative does not affect CA-SBR-2257 but affects two additional previously identified significant archaeologic resources. SBR-5361 was recorded by Chase in 1984 and is described as a site consisting of flakes, cores, bifaces, three trails, and four broken and bleached tortoise shells. Bone was also reported. SBR-5362 was also recorded by Chase in 1984 and is a quite similar site. The site was described as containing scatter of flakes, cores, manos, a metate fragment, hammerstones, maul, plane, and bleached tortoise shells.

TABLE 4.11.1-2
Summary of Paleontological Resources along the Cajon Pipeline Route

Milepost	Geological Units	Sensitivity	Comments
0 - 10	Pleistocene alluvial and lucustrine sediments	High	Fossils would be important in determining the age of the alluvial depositional sequence and for correlations with deposition of Pleistocene alluvial sediments associated with climate changes and the neotectonic structural evolution in the Great Basin.
10 - 26.5	Pleistocene older alluvial sediments	High	Sediments are extremely fossiliferous.
26.5 - 38.8	Pleistocene older alluvium (Qoa)	High	Important in determining age of depositional sequence and will facilitate stratigraphic correlations of Pleistocene alluvial sediments with climate changes and neotectonic structural evolution throughout the Great Basin.
38.8 - 46.7	Victorville Fan Complex	High	These deposits have a high potential to contain significant nonrenewable resources.
46.7 - 50.0	Cajon (Punchbowl) Formation Crowder Formation San Francisquito Formation	High	Deposits have a very high potential to produce vertebrate fossils. The San Francisquito Formation age range has been bracketed between late Cretaceous to early Tertiary.
50.0 - 51.1	Non-fossiliferous Jurassic or Cretaceous granitic rocks	Low	
51.1 - 54.0	Cajon (Punchbowl) Formation Crowder Formation San Francisquito Formation	High	
54.0 - 60.0	Mesozoic metasedimentary and igneous rocks (Pelona Schist), Tertiary granitic rocks and quaternary alluvial sediments.	Low	
60.0 - 63.0	Paleozoic metamorphic rocks	Low	
63.0 - 64.0	Deposits similar to San Timoteo Formation	High	Based on lithology, there is a high potential for vertebrate fossils to be recovered.

TABLE 4.11.1-2
Summary of Paleontological Resources along the Cajon Pipeline Route

Milepost	Geological Units	Sensitivity	Comments
64.0 - 65.0	Paleozoic metamorphic rocks	Low	
65.0 - 69.0	Pleistocene older alluvial fan deposits	High	Fossils from these deposits may help relate age and time of deposition of the older alluvial fans to the recent fan alluvium.
69.0 - 90.4	Pleistocene alluvial surface	High	Pleistocene faunas have potential to occur in undisturbed areas.
90.4 - 91.4	Recent alluvial deposits	Low	
91.4 - 95.0	Upper Miocene Puente Formation	High	Additional fossil material would be important to defining the chronology of the depositional history of late Miocene marine sediments.
95.0 - 105.0	Recent alluvial sediments	Low	
105.0 - 108.0	Late Miocene Puente Formation	High	
108.0 - 130.0	Recent stream alluvium	Low	

4.11.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The portions of the Sycamore Segment Alternative between M.P. 73 and M.P. 74 of the proposed route has not been subjected to any cultural investigations as part of this document. Therefore the presence or absence of existing resources in this section is not known at this time. The cultural resources for the remained of the route are as described for the proposed route in Section 4.11.1

4.11.4 M-70 PIPELINE

The information in this section is summarized from the Draft Environmental Impact Report/Statement on the proposed M-70 Pipeline replacement and optimization project.

Cultural Background

Ethnographic Background

The pipeline route enters the territories of three groups: the Chumash, the Gabrielino and the Tatavam Indians.

Interior Chumash

During ethnohistoric times the northern ten miles of the M-70 Pipeline route was occupied by the Castaic-direct speakers of the Interior Chumash. The Hokan-speaking Interior Chumash of the northern Chumash territory, which includes the emigdiano and Castac groups, are known primarily through the archaeological record. A Spanish reconnaissance under Father Jose de Zalvidea visited the area in 1806, and some ethnographic information was gathered by C. Hart Merriam in 1905. Historical information for the Interior Chumash is lacking and no survivors have been identified. The Interior Chumash were hunters and gatherers who ranged a peripheral area relying on seasonal nut, seed and plant foods supplemented by hunting large and small game. Freshwater fish were also a part of their diet.

Tataviam

The Tataviam's primary range included the upper reaches of the Santa Clara River drainage east of Piru Creek extending north to the southwestern fringes of the Antelope Valley. They were bounded on the west and north by Chumash, the east by Kitanemuk and Vanyume and on the south by the Gabrielino. They occupied the central portion of the project route, approximately from M.P. 10 to M.P. 45.

The Tataviam practiced a hunting and gathering subsistence strategy that was probably similar to adjoining groups. Primary vegetal foods were acorns, yucca, sage seeds, juniper berries and berries of islay. Small mammals, deer and probably antelope were the major animal foods. Virtually all of the Tataviam had been baptized at the San Fernando Mission by 1810. By 1834, most of these Tataviam had intermarried with other groups. The last speaker of the Tataviam language died in 1916.

Gabrielino

The culture and characteristics of the Gabrielino are described in Section 4.11.1. The southern one-half, from M.P. 45 to M.P. 90, of the proposed route lies within aboriginal Gabrielino territory.

Historical Background

Spanish annexation and colonization of Alta California, as manifested in the religious-military mission system, produced profound changes in the cultures of the indigenous population. The missions resettled and concentrated the aboriginal hunter-gatherer population into agricultural communities. The Mission tribes were christianized and converted to a form of peasantry which was in rapid decline in Europe. As a consequence of the concentration of population coupled with the indigenous population's lack of immunity to European diseases the mission tribes were decimated by common diseases which were generally not fatal to Europeans.

The Portola-Crespi expedition of 1769 was the first European exploration of Alta California which touched upon the project area. In the following year, the Fages expedition utilized the Tejon Pass as did the Garces expedition of 1776. The Spanish had little effect upon the project area until 1771 with establishment of the Mission San Gabriel Archangel in the Los Angeles Basin. The Mission San Fernando was established in the north of the San Fernando Valley in 1797. Later, an asistencia (LAN-962II) was constructed near the present day City of Newhall. This location was near the territorial edges of the Tataviam and Gabrielinos.

In 1854 Fort Tejon was established just two miles from the northern end of the project route, pointing out the historic importance as a communication route for the area through which the proposed project route passes. Fort Tejon was the headquarters for the United States Army First Dragoons, whose mission was to protect the Indians from extermination and to suppress cattle and horse theft. In 1858 a station on the Butterfield Overland Mail route was established at the fort. The post, now on the National Register of Historic Places, was abandoned in 1864.

In 1850, Los Angeles had a population of 1,610. Fifty years later the number of inhabitants had grown to over 102,000. Since 1900, the growth of Los Angeles and the San Fernando Valley has produced a massive, and in some ways unique, urban area which has obliterated most signs of the historical Spanish, Mexican, and pre-1940 American occupation of the area.

Archaeological Background

Literature and Archival Review

A review of available literature and archaeological site archives at the Archaeological Information Center at the University of California, Los Angeles and California State University, Bakersfield was undertaken. Data were compiled on all surveys and sites located directly upon the pipeline route or within a corridor encompassing one-half mile on either side of the route. Eighty-nine surveys had previously been accomplished on the proposed pipeline route or within the surrounding one mile corridor. Prior intensive or partial surveys have resulted in identification of 19 archaeological sites and one national register property within the one mile record search corridor. Table 4.11.5-1 lists these in order along the proposed pipeline route from the north end at Lebec toward the southern terminus in Torrance.

Recorded prehistoric archaeological sites include milling stations, lithic scatters, temporary camps, habitation sites, one village, a rock shelter, a "travel way" and one isolated artifact. Two of the lithic scatters are also identified as temporary camps, one is a one-mile plus long ridgeline station. Five habitation sites are listed, four of which are known to contain human burials. Evidence indicates that one of these, LAN-77, was buried during construction of State Route 99. The historic archaeological site is a scattering of roof tiles identified as belonging to the mission period. The remaining historic property is a National Register of Historic Places property. This is the Centinela Adobe, located at 7634 Midfield Avenue in Los Angeles. The Centinela Adobe is an 1834 structure which served as a center of colonial

TABLE 4.11.5-1
Previously Recorded Sites near the M-70 Pipeline

Site Number	Quad	Within Possible Impact Zone	Site Type
LAN-927	Frazier Mountain	No	Isolated Artifact
LAN-925	Lebec	No	Milling Station
LAN-903	Lebec	No	Lithic Scatter Temporary Camp
LAN-926	Lebec	No	Lithic Scatter Temporary Camp
LAN-1354	Liebre Mountain Black Mountain	Yes MP 18.8	Lithic Scatter "Travel Way"
LAN-444	Black Mountain	No	Lithic Scatter Milling Station
LAN-1015	Black Mountain	No	Lithic Scatter
LAN-77	Liebre Mountain	Possible MP 22.2	Protohistoric Habitation/Burial
LAN-441	Whitaker Peak	No	Rockshelter
LAN-248	Whitaker Peak	No	Habitation/Burial
LAN-962H	Newhall	No	Building Materials Scatter
LAN-823	Newhall	No	Habitation/Burial
LAN-67	Venice	No	Campsite
LAN-194	Venice	No	Habitation
LAN-60	Venice	No	Habitation/Burial
LAN-59	Venice	No	Village
LAN-216	Venice	No	Milling Station
LAN-213	Venice	No	"Metates"

administration and agricultural development during the time of Spanish sovereignty. The structure is located near M.P. 81.3 but is separated from the route by the Interstate 405.

FIELD INVESTIGATION

On January 4 and 5, 1990, a reconnaissance survey was conducted by driving and examining all portions of the route accessible by existing roads. The purpose of this survey was to identify the extent of prior disturbance, including levels of urbanization, and to formulate recommendations regarding any need for additional survey.

It appeared that at least fifty percent of the proposed pipeline route was confined to streets within urban areas which had very little or no original surface remaining. The urbanized areas were not completely contiguous until approximately M.P. 45, a point within the City of Newhall. Thus, the entire southern half of the proposed route was completely modified and left no areas which might be surveyed. Between M.P. 35 and 45 there were short segments of completely urbanized areas interspersed with segments which should be surveyed. In urban areas there were no areas which remained unmodified and in which any cultural resources could be recognized. Thus, it was concluded that survey of the urbanized areas was not warranted.

Dames & Moore conducted intensive pedestrian survey of 26.5 linear miles of 29% of the proposed project route. In total approximately 63.9 miles or 71% of the proposed route did not warrant survey due to conditions of full urbanization, lack of surface exposure adjacent to roadways, and areas which had been previously surveyed corridor widths coincident with the area of potential effect were examined. Widths ranges from 15 to 30 meters or approximately 50 to 100 feet. No cultural resources were found during intensive survey.

4.11.5 PACIFIC PIPELINE

The information in this section is summarized from the proponent's Environmental Assessment for the proposed Pacific Pipeline.

Cultural Background

Ethnographic Background

The proposed Pacific Pipeline corridor transects the ethnographic territories of the Chumash and Gabrielino tribes and passes near lands formerly occupied by the Esselen people. The project area lies in the territory of the Ventureno.

Chumash

"Chumash" is a term used to describe the peoples whose territories stretch from San Luis Obispo south to Malibu Canyon along the Pacific coast, including the Santa Barbara Channel Islands, and inland to the western edge of the San Joaquin Valley. The culture and characteristics of the Chumash are briefly described in Section 4.11.5.

Chumash villages were large, the most populous numbering several hundred residents. Fages estimated that 600 Indians lived in five Santa Barbara Channel villages. Along the Santa Barbara Channel, population density was greater than among the Obispenos, who probably numbered only 25 to 45 persons per square mile. Although each village was smaller, more settlements may have dotted the landscape.

Gabrielino

The proposed route through in Los Angeles County falls within the ethnographic territory of the Gabrielino, one of the least known of California tribal cultures, and is briefly described in Section 4.11.1.

Historical Background

Most of the lands that the project crosses were portions of Spanish and Mexican land grants. At the northern end of Los Angeles County was the Topanga Guadalasca, a grant of 30,594 acres, awarded in 1836 and 1837. Rancho Rio de Santa Clara, a grant of 44,883 acres, was awarded in 1837.

Archaeological Background

Literature and Archival Review

The background research was covered by five record searches. Two record searches were conducted at the Central Coastal Information Center at the University of California, Santa Barbara, for Santa Barbara County, while the other three were done at the South Central Coastal Counties. In addition to the record searches performed at the Information Centers, Peak & Associates, Inc., reviewed the National Register of Historic Places and the California Historical Landmarks.

In all, 61 cultural resource sites are listed on Table 4.11.6-1. Fifty-two are prehistoric-period resources, six represent the historic period, and six have both prehistoric and historic elements. One prehistoric site, CA-SBA-7, is a California Historical Landmark, while CA-SBA-6 has been determined as eligible for National Register nomination.

Field Investigation

The field survey was conducted in May and June of 1991. The survey team found that there has been widespread disturbance to the archaeological sites. The construction of the railroad had often cut deeply through middens into the culturally sterile sediments or bedrock sites. The midden was observed well above the tracks in the cut banks. Elsewhere, the installation of ballast obscured the study corridor.

During the conduct of the field work, the team identified four previously unrecorded cultural resources: three prehistoric-period and one historic-period site (Table 4.11.6-2). Of the previously identified and newly recorded sites, only 23 are or may possibly be on the ROW and may be subject to further impact.

4.11.6 FOUR CORNERS PIPELINE

The Four Corners Line 90 Pipeline is an existing pipeline which extends 185 miles from Cadiz in San Bernardino County to Los Angeles. The route is located within territory historically attributed to four native American groups: the Gabrielino, Serrano, the Cahuilla and the Chemehuevi. The native background of the Serrano and Gabrielino is described in Section 4.11.1. The Cahuilli reservations exist today in the areas south of Yucca Valley.

TABLE 4.11.6-1
Cultural Resources Within 20 Meters of the Pacific Pipeline Right Of Way (From Records Search)

Archaeological Site	Description	Within Corridor
SANTA BARBARA COUNTY		
CA-SBA-95	midden with lithic artifacts	No
CA-SBA-2189	shell midden, village site?	below ROW
CA-SBA-94	shell midden	below ROW
CA-SBA-1870	disturbed midden/historic deposit	Yes
CA-SBA-2190	disturbed scatter of chipped stone debris and cores, historic trash deposit	No
CA-SBA-1915	dark midden with chert flakes	No
CA-SBA-1156	low density scatter of shell and lithics	No
CA-SBA-1506	large complex village site	Yes
CA-SBA-93	midden	Yes
CA-SBA-1916	dark midden with chert flakes	No
CA-SBA-1969	shell midden	No
CA-SBA-1151	low density scatter of shell and lithics	No
CA-SBA-1204	cultural deposit with shell and ground stone	No
CA-SBA-1766	shell midden and associated artifacts	No
CA-SBA-89	midden, few random graves	Yes
CA-SBA-88	habitation site with burials	No
CA-SBA-87	probable tool-production site with waste material	No
CA-SBA-86	deposit of camp refuse, cemetery in southwest	Yes
CA-SBA-108	midden overlying hardpan, cemetery	Yes
CA-SBA-1731	occupation site with features, bone and tools, buried under recent fill	No
CA-SBA-1921	dark charcoal midden	No
CA-SBA-1676	low density artifact scatter with tools and ground stone	No
CA-SBA-83	midden with burials	No
CA-SBA-82	habitation site with cemetery on southeast slope	No
CA-SBA-79	village site?	Yes
CA-SBA-78	village site - shell midden and burials; *Mikiw*	Yes
CA-SBA-144	small occupation midden and possible burials	Yes
CA-SBA-76	surface scatter of artifacts, burials	No
CA-SBA-1326	light lithic scatter	No
CA-SBA-106	occupation midden	Yes

TABLE 4.11.6-1
Cultural Resources Within 20 Meters of the Pacific Pipeline Right Of Way
(From Records Search)

Archaeological Site	Description	Within Corridor
CA-SBA-73	major village site, burials	No
CA-SBA-142	black adobe shell midden and burials	No
CA-SBA-54	destroyed shell midden	No
CA-SBA-60	*Saspilil*, large Chumash occupation site, shell midden, more than 100 flex burials	No
CA-SBA-39	shell, ethnographic ground stone, two burials, glass beads, partially destroyed, *Kaawa'*	Yes
CA-SBA-24	early habitation site	No
CA-SBA-1958	lithic and shell scatter	Yes
CA-SBA-18/19	Chumash village: *Salawa*	Yes
CA-SBA-2179	sparse habitation site	No
CA-SBA-2178H	lithic scatter, structural remnants	Yes
CA-SBA-1566	shell midden, possible burials, *Kolola* West	No
CA-SBA-12	shell scatter	Yes
CA-SBA-2177H	historic trash	No
CA-SBA-7	habitation site, multicomponent burials, *Misopsno*	Yes
CA-SBA-6	beads, steatite vessels, burials	Yes
CA-SBA-1670H	trash of recent origin	No
CA-SBA-1167	low density shell and artifact scatter	No
CA-SBA-1E	shell midden	No
CA-SBA-1A/CA-Ven-62	burials, shell midden	No
VENTURA COUNTY		
CA-Ven-62/CA-SBA-1B	shell midden, burials	No
CA-Ven-916	quarry site	No
CA-Ven-644	shell midden	Yes
CA-Ven-141	flakes, shell beads, redeposit	No
CA-Ven-241	lithic scatter, tools, redeposit	No
CA-Ven-917	shell and lithic scatter, midden?	No
CA-Ven-240	lithic scatter, tools	Yes
CA-Ven-27B	shell midden	Yes
CA-Ven-842H	historic gun battery	No
LOS ANGELES COUNTY		
CA-LAN-1134H	San Fernando S.P. Station	No
CA-LAN-1595H/Union Station	Chinese occupation/train depot	No

TABLE 4.11.6-2
Unrecorded Cultural Resources Found During Field Survey of the Pacific Pipeline

Archaeological Site	Description	Within Corridor
PA-91-101	Cultural deposit on both sides of SPRR	Yes
PA-91-100	midden with chert flakes, some shell	Yes
PA-91-102	lithic scatter	Yes
PA-91-103	concrete footings in RR yard	No

4.12 System Safety and Reliability

The risk of an oil spill is a property of the designed pipeline system and is a characteristic of the environmental conditions. Therefore it is not necessary to discuss System Safety and Reliability as an issue in the Affected Environment. The system safety and reliability of the project is discussed in Section 5.12.

5.0

Environmental Consequences

5. ENVIRONMENTAL CONSEQUENCES

This chapter describes the environmental impacts of the proposed project and its alternatives. The impacts of the Cajon Pipeline are presented in detail, together with mitigation measures. Mitigation measures are measures that, if implemented, would lessen the impacts. The environmental impacts of the alternatives to the Cajon pipeline are summarized from the following environmental documentation.

Information on the Cajon Pipeline was developed specifically for this EIS/EIR. Information on the alternatives is summarized from the following environmental documentation:

- Final Environmental Impact Report/Statement for the Proposed M-70 Pipeline replacement and System Optimization Project. SCH 89010177. Dames and Moore for the U.S. Department of Agriculture and the Los Angeles Department of Transportation
- Pacific Pipeline Proponents Environmental Assessment, Pacific Pipeline Company, October, 1991.

These documents are available at :

Bureau of Land Management
California Desert District
6221 Box Springs Blvd.
Riverside, CA 92507

City of Adelanto
City Engineering Department
11600 Air Base Road
Adelanto, CA 92301

5.1 GEOLOGY

5.1.1 CAJON PIPELINE

The potential impacts associated with construction and operation of the Cajon Pipeline were evaluated from data obtained during a literature review and field reconnaissance. Data was collected from a literature review of publications by the Los Angeles County Department of Public Works, the California Division of Mines and Geology, and the U.S. Geological Survey.

Standards of Significance

Based on professional judgement and Appendix G of the CEQA Guidelines, geological impacts are considered significant if one or more of the following conditions would result from implementation of the proposed project:

- Exposure of structures to geologic hazards, soil and/or seismic conditions so unfavorable that they could not be overcome by special design using reasonable construction and/or maintenance practices.
- Location of the site within an Alquist-Priolo Special Studies Zone, or within a known active fault zone, or an area characterized by surface rupture that might be related to a fault.
- Construction on substrate that consists of material subject to liquefaction or other secondary seismic hazards in the event of groundshaking.
- Significant increase in wind or water erosion of soils, either on or off site.
- Landsliding or excessively steep slopes that could result in slope failure.
- Interference or interruption of access to mineral resources.

Evaluation of the significance of project-specific impacts in relation to this criteria is provided in the following discussions.

IMPACTS AND MITIGATION MEASURES

Impact

5.1.1-1 **The pipeline route and facilities would be exposed to seismic hazards from groundshaking and crossing of active faults, which could potentially result in damage to the pipeline and associated facilities.**

Surface rupturing along the trace of a fault effects all types of material. Damage due to surface rupturing is limited to the actual location of the fault-line break, unlike damage from ground shaking which can occur at great distances from the fault. Even a moderate earthquake can be accompanied by enough surface rupturing to damage foundations and buried utility lines that have not been adequately protected where they cross fault traces.

The pipeline route would cross active traces of the San Andreas and San Jacinto faults, and may cross the potentially active or buried segments of the Cucamonga, Whittier, and Newport-Inglewood faults. The pipeline route would cross the Helendale fault at approximately M.P. 6.5. The Helendale fault should be considered potentially active in the vicinity to the pipeline crossing. The greatest seismic hazard to the proposed Cajon Pipeline occurs south of Cajon Pass, where east-west trending thrust faults of the Cucamonga fault system and northwest trending strike slip faults of the San Andreas and San Jacinto fault systems converge. In this area, the proposed route would cross active traces (as defined by Alquist Priolo Special Studies Zone Maps) of the San Andreas and San Jacinto fault zones.

The urban segment of the route (M.P. 69 to M.P. 142) would avoid the Alquist-Priolo Special Studies Zones for the Cucamonga, Whittier, and Newport-Inglewood faults. However, the route could cross potentially active or buried active segments of these faults. In addition, the route would cross buried segments of the potentially active Rialto-Colton and Chino faults and buried unnamed fault traces in the Whittier Narrows.

The potential impact from ground shaking from surrounding earthquakes is considered avoidable through engineering design. Fault rupture could affect the project area during an earthquake and actual displacement could occur along the active fault traces discussed above. Suitable engineering design would be required to ensure the protection and integrity of the pipeline in such an event. Engineering design could reduce these impacts to a less than significant level.

Mitigation Measure

5.1.1-1 (a) *Additional studies shall be performed during the geotechnical investigation for the design of the proposed pipeline to identify the locations and width of the fault crossings. This data would be verified during excavation for the pipeline by an engineering geologist. Any deviations from the previously identified locations and width of the fault crossing would be incorporated into the fault crossing design.*

5.1.1-1 (b) *At locations of fault crossings, special design details shall be incorporated into pipeline design to mitigate the anticipated lateral displacements associated with fault rupture. The fault crossing design may comprise crossing the faults at an angle that allows ductile steel pipe to deform without rupturing. This typically requires crossing the fault at an angle of 60 to 85 degrees in the direction that will place the pipe in tension during faulting, rather than in compression.*

The pipe shall then be placed in a V-cut trench with sidewalls inclined as flat as 1.5:1 and backfilled with low shear strength material. Alternative fault crossing solutions could include crossing the fault on the ground surface or placing the pipeline in a large pipe that could absorb the anticipated fault displacement without impacting the oil pipeline. Seismic joints should be constructed in the annular space between the two pipes to provide support during static operating conditions. These joints should absorb fault movement by separating or crushing. These design details shall be approved by registered civil engineer.

5.1.1-1 (c) *Remotely operated automatic block valves shall be located at either side of active fault crossings, as shown in Table 3-1 of the Final EIS/EIR.*

5.1.1-1 (d) *An Oil Spill Contingency plan shall include emergency plans for rupture of the pipeline at fault crossings. This plan shall be reviewed by the Emergency Response Review Committee. The committee shall provide recommendations to the Lead Agencies for implementation of the plan. This plan shall be finalized and approved by the Lead Agencies (BLM, USFS and City of Adelanto).*

Implementation of these mitigation measures would reduce this impact to a *less-than-significant* level.

Impact

5.1.1-2 **The pipeline route would encounter areas of steep slope with potential instability and restoration problems.**

The Cajon Pipeline route crosses through three areas of locally steep slopes - the Kramer Hills (M.P. 20) CalNev slope (M.P. 59), Old Cajon Boulevard (M.P. 67), and west of Cajon Wash (M.P. 74). Though pipeline placement can be engineered to cross extremely steep slopes, actual slope stability, regrowth of vegetation, and prevention of erosion following construction is difficult to ensure.

Following field investigation two critical locations have been identified by the USFS. Directional drilling of the CalNev slope in preference to trenching has been recommended and adopted. This method of construction will not result in any surface disturbance. In consideration of the slopes west of Cajon Wash, avoidance has been recommended.

If the construction techniques or routing variations are not undertaken at these locations, slope instabilities would be considered a *significant impact.*

Mitigation Measure

5.1.1-2 (a) *To avoid slope instabilities and increased erosion, directional drilling construction techniques shall be utilized on the CalNev slope (M.P. 59). The project proponent shall pursue an alternative alignment at M.P. 74 to avoid steep slopes. This alternative alignment has been identified as Sycamore South Segment Alternative in this document and shall be approved and/or rejected by the Lead and Cooperating Agencies. (BLM, USFS and the City of Adelanto).*

5.1.1-2 (b) *The revegetation plan within the Erosion and Sedimentation Control Element of the COM Plan shall include slope stabilization measures where necessary to the satisfaction of the Erosion and Sediment Control Review Committee.*

Implementation of these measures would reduce this impact to a less-than-significant impact.

Impact

5.1.1-3 **The pipeline route crosses areas susceptible to liquefaction.**

Based on the limited information of soil types and groundwater data, the liquefaction potential of the subsurface material along the Mojave segment is considered to be low, as depth to groundwater is expected to be greater than 100 feet. In the mountain segment of the route, groundwater ranges from deeper than 100 feet at the mountain fronts to about 30 feet in the center of the stream valleys. Shallow groundwater would occur seasonally in Lytle Creek and Cajon Creek. It is also possible that areas adjacent to the fault systems that act as barriers to the subsurface movement of groundwater may have local high water tables. These areas are considered to have a moderate liquefaction potential.

South of Cajon Pass, high groundwater levels (between 10 feet to 30 feet below surface) occur within and around the Whittier Narrows Flood Control Basin, Puente Valley (San Jose Creek) and Long Beach areas. These areas would have moderate liquefaction susceptibility.[1] Operation of the Rio Hondo spreading basins in conjunction with high stream flows may raise local groundwater levels in the vicinity of the pipeline route. The pipeline would be constructed within the levee of the Rio Hondo channel, approximately 10 to 20 feet above channel surface and would be anticipated to be above even a high groundwater level.

Final determination of the liquefaction potential and selection of the most appropriate mitigation effort will require evaluation of site specific liquefaction potential during site specific design of the pipeline. However, of the above locations, the crossing of the Los Angeles River and the Long Beach areas present the greatest hazard.

Mitigation Measure

5.1.1-3 *The pipeline route between M.P. 62 and M.P 85 and M.P. 120 and M.P. 142 shall be reviewed to determine the location of the ground water table, the characteristics of underlying soil and hence the most appropriate measure to reduce liquefaction potential or provide protection of the pipeline from soil liquefying. These measures may include but would not be limited to:*

(a) *use of stone/gravel columns to improve dissipation characteristics and increase density of soil where appropriate, or*

(b) *concrete coating the pipeline to prevent pipe rising out of the ground.*

Implementation of these measures would reduce this impact to a less-than-significant level.

Impact

5.1.1-4 **Pipeline construction would require excavation and stockpiling of soil and may result in soil erosion.**

In areas where the Cajon Pipeline would not be beneath roadways, the replaced soil after pipeline construction may be susceptible to significant erosion until revegetation has taken place. Approximately 72 miles of the proposed pipeline route would be installed in areas not covered by roadways. The potential for erosion would vary in degree with the characteristics of the soils being disturbed. Slope, soil depth, shrink-swell behavior, drainage, erodibility and texture are some of the characteristics which influence the effects of erosion on the soil. These characteristics are in Section 4.1.1 and summarized in Table 4.1.1-2.

Impacts associated with soil erosion include increased soil loss (due to wind and water erosion) and increased sediment yields downstream from areas of disturbed soils. Soils that are highly erodible, very shallow, or very steep are expected to have the greatest potential for significant environmental impacts during the construction. Soil complexes with high to very high erosional hazards include Cajon, Helendale-Bryman, Kimberline, Norab-Holloram and Oceana (Table 4.1.1-2). Erosion impacts associated with replaced soils would be *significant* unless erosion control measures are implemented.

Excess soil from boring pits and boring operators would need to be removed to clean fill sites. For locations in Forest Service lands, this fill could be placed on the forest road system to reduce the number of truck trips on forestry roads.

Mitigation Measure

5.1.1-4 *An Erosion and Sedimentation Control Element, a component of the COM Plan, shall be submitted to the BLM and USFS and the City of Adelanto as specified in Mitigation Measures 5.2.1.1. This element shall be reviewed by the Erosion and Sediment Control Review Committee.*

The committee shall provide recommendations to the Lead Agencies for implementation of the element.

Implementation of these measures would reduce this impact to a less-than-significant level.

Impact

5.1.1-5 **In urban areas of Los Angeles County, excavation of the pipeline may encounter contaminated soils.**

The potential for encountering contaminated soil which may present a hazard to worker health and safety is considered to be high through the southern portion of the route, particularly in industrialized areas west of the Ontario Airport, the Puente Valley and along the Los Angeles River and Long Beach Freeway as can be appreciated by review of Table 4.1.1-3. The majority of the potential sources of hazardous material are associated with underground fuel storage tanks and are found along major roadways. In this instance the probability of encountering contaminated soil is dependent upon the distance from the source. This exact distance will not be known until discussion is undertaken with the City's along the route regarding the most appropriate placement within the road ROW and until detailed engineering design is completed.

A more detailed Phase I site assessment should be undertaken to further define the number of locations which are of potential concern. Additionally, the probability of encountering a contaminated soil site which is not listed is high. For this reason, general soil review measures should be undertaken for the route south of Cajon Pass. This is a *potentially significant impact.*

Mitigation Measure

5.1.1-5(a) *A detailed Phase I site assessment shall be undertaken following detailed engineering design to identify the exact locations and extent of contaminated soil sites previously identified and others which may potentially occur within the construction rights-of-way. These studies may comprise review of EPA and other governmental agency's listings of contaminated soil sites.*

5.1.1-5(b) *Soils must be visually inspected as excavation occurs. If by visual inspection there is any evidence that contamination may be present, soil testing shall be undertaken at the identified location of contamination. No construction of the pipeline will occur within soil exhibiting evidence of contamination, until written approval from the regulatory agencies that have authority has been received.*

Implementation of this mitigation measure would reduce this impact to a *less-than-significant* level.

Impact

5.1.1-6 **An accidental pipeline leak or rupture would result in soil contamination and potential groundwater contamination in areas of high groundwater occurrence.**

A pipeline leak or rupture would result in release of crude oil at the point of rupture to the surrounding soil at generally four feet below grade. The extent of the contamination would depend on a number of factors, including duration of the leak, volume spilled, head pressure, soil moisture conditions, soil permeability, oil viscosity, and topography of the immediate surrounding area of the rupture point. The vertical progression of oil infiltration may be inhibited by (i) the threshold of saturation of the soil, (ii) the existence of an impermeable layer in the path of the oil, and (iii) the groundwater level. Oil would migrate at a faster rate in coarse soils than in fine soils.

The characteristics of the crude being transported within the Cajon Pipeline indicate that the oil on release would cool rapidly, become increasingly more viscous, and hence, would not migrate rapidly from the point of release. Rapid and effective clean-up operations would further contain the extent of the oil spill. However, this remains a *potentially significant impact.*

Mitigation Measure

5.1.1-6 (a) *Contaminated soils shall be excavated, treated, and disposed of at a registered landfill.*

5.1.1-6 (b) *An Oil Spill Contingency Plan shall be developed which would include procedures for removal of contaminated soils and containment procedures in areas of high groundwater, and revegetation and restoration of damaged areas. This plan shall be reviewed by the Emergency Response Review Committee. The committee shall provide recommendations to the Lead Agencies for implementation of the plan. This plan shall be finalized and approved by the Lead Agencies (BLM, USFS and City of Adelanto). Revegetation and restoration shall be in accordance with the Erosion and Sedimentation Control Element of the COM Plan and shall be reviewed by the Erosion and Sediment Control Review Committee.*

5.1.1-6 (c) *Implementation of Mitigation Measures 5.1.1-1 (c).*

5.1.1-6 (d) *Soil that is to be used as fill must be clean, similar to surrounding soils, capable of supporting the existing vegetation and consistent with the requirements for fill as outlined within the Erosion and Sediment Control Element of the COM Plan. This element shall be reviewed by the Erosion and Sediment Control Review Committee.*

Implementation of these mitigation measures would reduce this impact to a *less-than-significant* level.

Impact

5.1.1-7 The pipeline route may interfere with plugged and abandoned active and inactive oil wells.

The proposed pipeline route passes through areas of the Montebello and Wilmington oil fields. In the Montebello area, the route comes within close proximity to numerous plugged and abandoned, active, and inactive oil wells. If the pipeline or any structure associated with the project is located over or in the proximity of a plugged and abandoned well, there is the possibility that the well may need to be plugged and abandoned to current Division of Oil and Gas specifications. Furthermore, if any plugged and abandoned or unrecorded wells are damaged or uncovered during excavation or grading, remedial plugging operations may be required.

Mitigation Measure

5.1.1-7(a) *Prior to commencing construction, the Cajon Pipeline Company shall consult with the Department of Conservation, Division of Oil and Gas (DOG) for information on wells located within the pipeline right-of-way.*

5.1.1-7(b) *If the pipeline is located over or in the proximity (that is, within the ROW or within 20 feet of the ROW) of a plugged and abandoned well then coordination shall be undertaken with the DOG to ensure that the well is correctly abandoned and does not require reabandonment.*

Implementation of this mitigation measure would reduce this impact to a *less-than-significant* level.

5.1.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative would result in similar impacts to seismic hazard (Impact 5.1.1-1), liquefaction potential (Impact 5.1.1-3), soil erosion (Impact 5.1.1-4), and soil contamination (5.1.1-5 and 5.1.1-6) as the proposed route. The Kramer Segment Alternative, however has average slopes of less than 2 percent from M.P. 0 to M.P. 25, and would not cross through the Kramer Hills which have slopes as steep as 14 percent. Special construction techniques or avoidance would not be necessary for this portion of the route.

5.1.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative breaks from the proposed route at M.P. 73 to avoid steep slopes on the north side of the I-15. This alternative would have similar impacts to seismic hazard (Impact 5.1.1-1) liquefaction potential (Impact 5.1.1-3), soil erosion (Impact 5.1.1-4) and soil contamination (Impacts 5.1.1-5 and 5.1.1-6) as the proposed route. Impacts due to slope stability problems west of Cajon Wash would not occur.

5.1.4 M-70 PIPELINE

The M-70 pipeline crosses areas subject to seismic activity and slope instability. Hazards from slope instability would be reduced to an insignificant level by the use of standard engineering practices for stabilizing slopes. The risk of pipe rupture due to movement on faults would be minimized by evaluating the rupture hazard in each case, and incorporating various engineering features, including angled crossings, thick-walled pipe and isolation valves.

5.1.5 PACIFIC PIPELINE

The Pacific Pipeline crosses areas subject to seismic activity and slope instability. Hazards from slope instability would be reduced to an insignificant level by the use of standard engineering practices for stabilizing slopes. The risk of pipe rupture due to movement on faults would be minimized by evaluating the rupture hazard in each case and incorporating various engineering features including angled crossings, thick-walled pipe and isolation values.

5.1.6 FOUR-CORNERS PIPELINE

The existing Four Corners Line 90 Pipeline crosses areas subject to seismic activity and slope instability. The Four Corners Line 90, an older pipeline built when less was known about seismic effects, is probably more vulnerable to damage than newer pipelines. The risk of pipe rupture due to movement on faults could be reduced by evaluating the rupture hazard and rebuilding pipeline sections incorporating various engineering features, including angled crossings, thick-walled pipe and isolation valves.

5.1.7 NO PROJECT

Under the No Project alternative, construction-related impacts associated with the proposed project would not occur. Increased harbor activity would occur at Long Beach harbor. These operations would not have any impacts on seismic hazard, soils, or other earth resources.

ENDNOTES

1. Tinsley and others, 1985

5.2 ONSHORE WATER RESOURCES

5.2.1 CAJON PIPELINE

This section addresses the project-specific impacts of the proposed Cajon Pipeline project on hydrological resources, including surface runoff and water quality. Pipeline construction would impact existing drainage facilities and may potentially affect water quality.

Background information was collected from topographical maps of the area and reports prepared by the Department of Water Resources, the U.S. Geological Survey, the Regional Water Quality Control Board, Los Angeles Flood Control District, and the San Bernardino Public Works Department. This information, in conjunction with a field survey, was used to determine the existing land-use patterns in relation to drainage facilities. Impacts of the proposed pipeline were then determined by assessing what changes would result in streamflow, sediment generation, and potential water quality concerns.

Standards of Significance

Based upon professional judgement and reflective of Appendix G of the CEQA Guidelines, impacts are considered significant if one or more of the following conditions would result from implementation of the proposed project:

- Significant change in rate and amount of surface runoff or change in amount of water in any water body.
- Substantial degradation of water quality.
- Contamination or substantial reduction of a public water supply.
- Substantial degradation or depletion of groundwater resources.
- Substantial interference with groundwater recharge or direction and rate of groundwater flow.
- Location of facilities within a flood-prone area or alterations to the course or flow of floodwater.
- Substantial flooding, erosion or siltation.
- Alteration of stream flow characteristics which result in erosion, sedimentation or flooding downstream.

Evaluation of the significance of project-specific impacts in relation to this criteria is provided in the following discussion.

IMPACTS AND MITIGATION MEASURES

Impact

5.2.1-1 **Construction of the proposed pipeline from M.P. 0 to M.P. 80 and at stream crossings could result in high rates of erosion and generation of sediment load which could impact water quality.**

Construction of the pipeline and associated facilities could result in high erosion rates, typical of disturbed sites during the rainy season. The delivery of eroded sediments into receiving waters could degrade aquatic resources and could be considered a violation of applicable water quality statutes in the absence of implementation of erosion control measures (Best Management Practices).

At most stream crossings the pipeline would be trenched across the channel or jacked and bored beneath the stream channel. Sediment load in each stream would be increased by these construction activities at times of stream flow and result in a *significant impact* to water quality. Scheduling of activities during the dry season would reduce the potential for significant sediment generation. At other times, construction techniques would be required to minimize and protect the working area within the flowing stream.

Project Mitigation Measures

5.2.1-1(a) *Construction activities shall be scheduled for the dry season. If stream conditions are such that the channel contains some surface flow, cofferdams or other construction techniques shall be utilized subject to the approval of the Lead Agencies (BLM, USFS and the City of Adelanto). Public lands (both BLM and USFS lands) will only be used with prior approval of and under the direct supervision of the BLM or Forest Service, to minimize the amount of suspended sediments resulting from trenching activities. Downstream detention basins, sedimentation traps, evaporation ponds, etc., shall also be installed.*

5.2.1-1(b) *The Cajon Pipeline Company shall be advised to seek early consultation with the Department of Fish and Game (CDFG) to obtain a Streambed Alteration Agreement under Section 1601 For construction activities across the following streams and washes: Fremont Wash, Crowder Canyon, Cleghorn Canyon, Cajon Creek, Sycamore Canyon, and Lytle Creek. Under this agreement any Mitigation Measures would be decided at the time of consultation.*

5.2.1-1(c) *At stream crossings, the disturbance of the stream bed and banks required for construction equipment shall be kept to a minimum, but in no cases greater than 100 feet by 250 feet.*

5.2.1-1(d)*The Erosion and Sedimentation Control Element of the COM Plan shall be submitted to the appropriate governmental agencies for approval by the project proponent prior to grading. The Erosion and Sediment Control Element shall be reviewed by the Erosion and Sediment Control Review Committee for any further comments prior to implementation. This plan shall include, but is not limited to, the following erosion control methods.*

(i) *Topsoils (at least the top 6" of soil) would be removed and segregated from the ditch spoils, and would be replaced as topsoil upon completion of construction.*

(ii) *During construction, interceptor ditches or drainage swales shall be used to intercept storm runoff to prevent sediment form leaving a disturbed area or entering adjacent streams. In addition, temporary mulching, seeding, or other suitable stabilization measures shall be used to protect exposed areas.*

(iii) *Excess soil from construction on National Forest lands shall be placed on Forest roads, under the direction of the Forest Service. Excess soil from construction on BLM lands shall be either disposed of at a registered land fill or placed on roads within BLM lands, under the direction of BLM.*

(iv) *Revegetation methods shall include discing and drilling on the contour (with broadcast seeding of a native species mix), fertilizing, water barring, tree spading of mature species along the ROW into the disturbed areas, and scattering of previously cleared brush throughout cleared/disturbed areas. Revegetation methods shall be reviewed by the Erosion and Sediment Control Review Committee. Recommendations on the plan shall be made to the Lead Agencies (BLM, USFS, and the City of Adelanto).*

(v) *Illegal vehicle entry into revegetated areas on National Forest lands shall be precluded by: a) stockpiling all vegetation and boulders removed during construction, and randomly scattering them throughout the disturbed areas after revegetation, concentrating some in areas of easiest illegal access; b) screening of the ROW in areas of easy illegal access by using a tree spade to plant mature species from nearby areas; c) barricading some areas of easy illegal access to the satisfaction of the Forest Service; d) replacing roadside berms with larger than normal berms where the alignment crosses National Forest roads; and e) replacing any disturbed or breached fencing with the same quality or better fencing. Where the route enters Forest land from the north in Baldy Mesa, a large steel lattice work, approved by the Forest Service, sufficient to preclude OHV passage and set in concrete, shall be erected, anchored into the downslope on the west edge and running east to Baldy Mesa Road proper.*

(vi) *The CalNev slope in Cajon Pass shall be directionally drilled to avoid disturbance of surface soils.*

(vii) *Soil on graded slopes shall be revegetated in accordance with the Erosion and Sediment Control Element of the COM Plan and to the satisfaction of the Erosion and Sediment Control Review Committee as soon as possible following disruption.*

5.2.1-1(e) *A National Pollutant Discharge Elimination System (NPDES) permit shall be obtained from the RWQCB for grading of the pipeline right-of-way and construction at Cajon Terminal and the Adelanto Pump Station. Construction shall also comply with storm water quality management programs of the respective local agencies.*

Implementation of these mitigation measures would reduce this impact to a *less-than-significant* level.

Impact

5.2.1-2 **Construction of the pipeline may interfere with operation of the Whittier Narrows Dam, Etiwanda Creek percolation basins, the Rio Hondo spreading basins, and the Dominguez Gap percolation ponds.**

The pipeline route follows Durfee Road which traverses the dam area, circumvents the dam and is located within the levee of the Rio Hondo channel, adjacent to the spreading basin facilities. As the dam is not used for impoundments, it is anticipated that pipeline construction within roadways through the dam area would not interfere with facilities operations.

Construction of the pipeline may interfere with operations when the spreading/percolation basins are being used along the Rio Hondo channel and adjacent to Etiwanda Creek. Groundwater levels may fluctuate due to these operations, and timing of construction would determine if dewatering is necessary. Pipelines for water transfer and outlet structures for the basins are situated within the levee in which construction would occur. Prior to final design, determination of the location of these facilities would be necessary to ensure that spreading operations are not interrupted. Without consultation, *potential impacts* to public water supplies and public utilities could occur.

Mitigation Measure

5.2.1-2 *Prior to construction, the Cajon Pipeline company shall coordinate with the U.S. Army Corp of Engineers, the San Bernardino County Flood Control District, Metropolitan Water District, and the Los Angeles County Department of Public Works to determine the location of existing facilities that may be affected by pipeline construction, and appropriate construction scheduling, taking into consideration the operations of the Whittier Narrows Dam, Etiwanda Creek percolation basins, the Rio Hondo Spreading grounds, and the Dominguez Gap percolation ponds.*

Implementation of this mitigation measures would reduce this impact to a *less-than-significant* level.

Impact

5.2.1-3 **Construction of the storage area and pumping facilities may result in an increase in stormwater runoff.**

Of the five acres required for the pumping facilities and control center at the Adelanto Pump Station, approximately 45 percent will comprise of impervious surfaces in the way of building area and parking. Construction of the storage area at Cajon Terminal would result in less than a 15 percent increase in impervious areas as a result of structures, tank and parking area. This increase in impervious area would result in a proportional increase of surface runoff at the pump stations and at the storage area.

Surface runoff from within the tank areas at the storage area would need to be collected due to water quality concerns. At the Cajon Terminal, surface water could be filtered to the ground. Surface runoff from building and parking areas at the Adelanto Pump Station could be collected by a stormwater drainage system. However, at the Adelanto Pump Station, consideration of the city's drainage plans would be required to ensure that drainage problems do not occur. Without consultation this may result in *a significant impact* to drainage.

Mitigation Measure

5.2.1-3 *The storm drainage system for the Adelanto Pump Station shall be sized, designed and constructed in accordance with requirements of the City of Adelanto and consistent with the city's Master Drainage Plan.*

Implementation of this mitigation measures would reduce this impact to a *less-than-significant* level.

Impact

5.2.1-4 **Hydrostatic testing of the pipeline would result in discharge of test water.**

Following pipeline construction, the pipeline route is tested in successive sections by pumping water under pressure for its length. Approximately 26 acre-feet would be required for hydrostatic testing. During testing, the test water would pick up construction debris, mill-scale, minimal hydrocarbons, and some mud. Release of the test water would be regulated by an NPDES permit for a point source discharge obtained from the Regional Water Quality Control Board. This is considered a *less-than-significant impact.*

Mitigation Measure

5.2.1-4 *All test water shall be discharged at the GATX Carson Terminal in accordance with the terms of the terminal NPDES permits. No water shall be discharged on Forest Service lands.*

Implementation of this mitigation measure would reduce this impact to a *less-than-significant* level.

Impact

5.2.1-5 **A pipeline or pipeline tank leak or rupture could result in an oil spill and subsequent degradation of surface runoff by spilled crude oil.**

An oil spill could result from pipeline rupture adjacent to or within any number of stream channels along the pipeline route. Particularly sensitive locations include the washes of Lytle and Cajon creeks, the Whittier Narrows Dam and the Rio Hondo. The oil spill detection system and the presence of block and check valves would help to limit the quantity of oil spilled. The actual quantity of oil spilled is dependent on the pressure in the system and the time between leak occurrence and system shutdown. The leak detection, oil spill contingency plan, and the probability of oil spills over the operation life of the system are described in Section 5.11.

Block and check valve locations are listed in Table 3-1. A number of valves are located at fault crossings in case of fault rupture. Valves are also located at stream crossings of San Jose Creek, Rio Hondo, and Los Angeles River. In the event of a rupture adjacent to a stream, the quantity of crude oil that potentially could find its way to the watercourse is dependent on the valve separation upstream and downstream of the rupture point and the pipeline grade. Stream locations along the pipeline route and adjacent valves are shown in Table 5.2.1-1.

Of these streams and valve locations, critical locations occur at Cajon Wash (M.P. 62.8 to 72.6), Etiwanda Creek (M.P. 80), San Antonio Creek (M.P. 93.2), Whittier Narrows Flood Control Basin (M.P. 122) and Rio Hondo/Los Angeles River (M.P. 124.1 to 135.7). These locations have been identified either due to the length of pipeline upstream of the stream crossing and the natural grade or due to the long distances over which the pipeline parallels the stream. The Cajon Wash, Whittier Narrows area and Rio Hondo locations are particularly sensitive due to uses which occur adjacent to the waterway.

The physical properties of the crude being transported would result in a contained spill, which could be easily removed. However, long-term impacts to surface water could occur if oil were to saturate stream sediments and the saturated sediments were not removed. The remaining oil would be released over a long period of time and would persist in the environment for many years.

Oil contamination of surface runoff could also result from a leak or rupture within the crude oil storage area proposed at Cajon Terminal. An oil spill would be contained at this location by an earthen dike approximately 6 feet high. This dike would provide 125 percent containment of each tank. The earthen surface enclosed by the dikes that surround each tank would be graded to direct the flow of storm water into a catch basin at one end.

The impacts resulting from a crude oil spill are considered significant, but can be corrected by system design.

Mitigation Measure

5.2.1-5(a) *An Oil Spill Contingency Plan shall be developed which would include procedures for oil spill cleanup at river crossings. This plan shall be reviewed by the Emergency Response Review Committee. The committee shall provide recommendations to the Lead Agencies for implementation of the plan. This plan shall be finalized and approved by the Lead Agencies (BLM, USFS and City of Adelanto).*

5.2.1-5(b) *Remotely operated automatic block valves will be located in the pipeline route along the Cajon Wash (M.P. 72), and Etiwanda Creek (M.P. 80), and as shown in Table 3-1.*

5.2.1-5(c) *In those areas where the alignment will be in Old Cajon Boulevard, asphalt curbing shall be installed along all downslope edges of the pavement, to route and contain any product spills from ruptures. Any spill plans, or emergency response/repair plans, would have maps locating drainage structures leading from the pavement into Cajon Creek or its tributaries. Such plans will provide for the rapid closure/blocking/plugging of such structures.*

5.2.1-5(d) *Implementation of mitigation measures in Section 5.12 to contain and reduce spills.*

5.2.1-5(e) *At M.P. 99.5 and 100.1 the Cajon Pipeline Company shall coordinate with the City of Pomona methods of reducing the risk of oil spill into the storm channels below these crossings. This may require rerouting so that the pipe can be bored beneath these channels, or inclusion of additional valves at these locations to reduce the linefill at each crossing. Additionally, if pipe is to be hung from the bridge support structure, engineering review shall be conducted to ensure engineering integrity and strength of each bridge.*

Implementation of these mitigation measures would reduce this impact to a *less-than-significant* level.

Impact

5.2.1-6 **The pipeline could be exposed to scour and natural changes in the stream's channel morphology over its operational life.**

The pipeline traverses natural streams as listed in Table 5.2.1-1. Under large flows, riverbed movements can result in a deepening or raising of the stream bed. Bed scour could damage the pipeline during very large flow events. This potential would be limited by burying the pipeline below the 100-year scour depth with an additional six feet of cover. The pipeline would also be encased in concrete to prevent buoyancy of the pipeline during flood events. At critical locations, a concrete blanket would prevent undermining of the pipe and adjacent bridge structures. Without mitigation, this is considered a *significant impact.*

TABLE 5.2.1-1
Streams Crossed by the Cajon Pipeline and Associated Valve Locations

MP	Stream	Upstream Valve Location (M.P.)	Downstream Valve Location (M.P.)
26.0	Buckhorn Wash	23.2	26.6
39.0	Fremont Wash	37.3	41.3
51.8	California Aqueduct	51.7	51.9
53.1	Unnamed Wash	51.9	55.2
54.4	Manzanita Wash	51.9	55.2
63.8	Crowder Canyon	63.6	66.3
65.5	Cleghorn Canyon	63.6	66.3
66.2	Unnamed Wash	63.3	66.3
67.5	Unnamed Wash	66.3	73.0
72.0	Cajon Wash	66.3	73.0
73.2	Sycamore Canyon	73.0	74.5
74.3	Lytle Creek	73.0	74.5
80.1	Etiwanda Creek	77.4	83.0
83.0 to 88.0	Day Creek	83.0	85.2 87.0
91.3	Cucamonga Creek	87.0	92.1
93.2	San Antonio Creek	92.1	96.9
104.0	San Jose Creek	103.0	109.2
108.7	Diamond Bar Creek	103.0	109.2
110.1	San Jose Creek	109.2	114.2
112.8 to 117.2	San Jose Creek	114.3	119.2
119.3	San Gabriel River	119.2	124.0
122.0	Whittier Narrows Dam	119.2	124.0
124.1	Rio Hondo	124.0	124.3
135.7	Los Angeles River	135.5	135.8
138.7	Compton Creek	135.8	139.0
141.7	Dominguez Channel	141.9	141.9

Mitigation Measure

5.2.1-6 *Modeling of stream bed geometry shall be undertaken to determine the scour depth of the 100-year 24-hour runoff event for all major stream crossings. The pipeline burial depth shall be that scour depth plus six feet. The pipeline burial depth shall be checked annually at the following important crossings: Buckhorn Wash, Fremont Wash, Crowder Canyon, Cajon Creek, and Lytle Creek. When the stream channel has degraded to the point where the pipeline is exposed or is buried less than four feet below the 100-year scour depth, the pipeline shall be reburied to the proper depth. A concrete blanket shall be required at Crowder Canyon and Cajon Wash crossings.*

Implementation of this mitigation measures would reduce this impact to a *less-than-significant* level.

5.2.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative would result in similar impacts as addressed in Section 5.2.1 (Impacts 5.2.1-1 through 5.2.1-6).

5.2.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative would result in similar impacts as addressed in Section 5.2.1 (Impacts 5.2.1-6).

5.2.4 M-70 PIPELINE

The M-70 Pipeline route crosses 71 streams, three of which flow on a somewhat regular basis. Other crossings of concern include drainages which flow during the runoff period or during large storm events into reservations for drinking water supplies or other beneficial uses.

Impacts to surface-water resources associated with the construction phase could result from increased sediment loading, changes in channel geometry and gradients, spill of hydrostatic test waters and spills of lubricating oils or equipment fuels. By the use of Best Management Practices (such as operation scheduling, revegetation), sediment loading impacts are expected to be adverse, but not significant. Impacts to water quality due to spill of lubricating oils or equipment fuels are expected to be adverse but not significant.

Over the operational life of the pipeline, channel scour and natural changes in the morphology of the streams and drainages could affect, and possibly expose, the buried pipeline. However, provided the pipeline is buried deep at critical river cross-sections (Santa Clara River), this impact could be minimized. Hydrostatic test water is not expected to have a significant impact on surface-water resources. The test water would be treated by a National Pollution Discharge Elimination System- permitted clarifier to meet the requirements of the Regional Water Quality Control Board.

5.2.5 PACIFIC PIPELINE

The Pacific Pipeline route crosses 136 waterways which flow on a somewhat regular basis. Pacific Pipeline plans to construct 56 of its 83 coastal stream crossings in existing fill or they will bore to avoid any stream disturbance. Impacts to surface-water resources associated with the construction phase could result from increased sediment loading, changes in channel geometry and gradients, spill of hydrostatic test waters, and spills of lubricating oils or equipment fuels. By the use of Best Management Practices, sediment loading impacts are expected to be adverse but not significant. Impacts to water quality due to spill of lubricating oils or equipment fuels are expected to be adverse but not significant.

Bed and bank scour and stream geometry changes over the design life of the project could affect the pipeline. Such processes could particularly occur at Ellsworth Barranca, Santa Paula Creek, Orcutt Canyon, Sespe Creek, San Martinez Grande, San Martinez Chiquito, Castaic Creek, and the Santa Clara River. Channel stability effects could be brought about by placement of the line during construction, or by flow effects from other nearby channel structures. Pipeline burial at stream crossings will minimize the risk of pipeline damage resulting from flood events and channel scour. Bridge crossings would minimize construction impacts to stream channels.

5.2.6 FOUR CORNERS PIPELINE

Use of the existing Four Corners Line 90 Pipeline would require construction of three new heater stations and four new pump stations. Impacts to surface water would result from increased sediment load and erosion at these specific construction sites. Over the operational life of the pipeline, channel scour and natural changes in the morphology of the intersected streams and drainages could affect, and possible expose the buried pipeline at major crossings of Whitewater River, San Gorgonio River and Temescal Wash. However, provided the pipeline is buried at depth at critical river cross-sections this impact could be minimized. Operational impacts, such as oil spills at storage areas could occur, but are not expected to be significant.

5.2.7 NO PROJECT

Under the No Project alternative, construction-related impacts would not occur. It is anticipated that the increased oil importation would occur by way of marine tanker. This would increase the potential risk of oil spills to occur in coastal waters. This would be considered a potentially significant impact.

5.3 BIOLOGICAL RESOURCES

5.3.1 CAJON PIPELINE

This section assesses the biological impacts resulting from the proposed Cajon Pipeline Project. Both construction and operational impacts to freshwater and terrestrial resources are discussed. Section 7 consultation for the Cajon Pipeline has not been completed, but it is underway. Environmental impacts to biological resources have all been identified and mitigation measures have been recommended. When Section 7 consultation is complete, further refinement of these mitigation measures may occur. The results of Section 7 consultation and any changes in proposed mitigations will be included in the Record of Decision.

Standards of Significance

Impacts to biological resources are considered significant if one or more of the following conditions would result from implementation of the proposed project.

- Substantial effect, reduction in numbers, restricted range, or loss of habitat for a population of a state or federally-listed threatened or endangered species.
- Substantial interference with the movement of any resident or migratory fish or wildlife species.
- Substantially diminished or reduced habitat for fish, wildlife, or plants.
- Substantially diminished habitat that has significant human use for scientific or educational purposes.
- Disturbance of wetlands, marshes, riparian woodlands and other wildlife habitat.
- Drop in fish or wildlife populations below self-sustaining levels.
- Loss of a native wildlife habitat or a plant community that is considered to be regionally unique or rapidly declining.
- Threatened elimination of a native plant or animal community.

Evaluation of the significance of project-specific impacts in relation to these criteria is provided in the following discussion.

IMPACTS AND MITIGATION MEASURES

Impact

5.3.1-1 **Construction activities could result in substrate removal, increased sedimentation, and habitat alteration for aquatic species, including the speckled dace, a federal candidate (category 2) and a species of special concern.**

Construction activities are planned to be undertaken during the dry season to avoid construction through flowing streams. Furthermore, the majority of the stream crossings would be achieved by boring the channel. However, construction in and near washes such as Buckhorn and Fremont, and staging near Lytle Creek and Cajon Wash may result in substrate removal. This impact may result in reduced abundance of plants (algae and macrophytes) and benthic microinvertebrates, and the reduction or displacement of resident fish populations. Sedimentation within streams of spawning and juvenile rearing areas would reduce fish populations. Disruption of streambeds may also result in decreases in dissolved oxygen and the release of nutrients. Impacts to aquatic communities from construction would likely be short term, generally less than one year for fish communities and several months for other aquatic communities.

Pipeline construction would have little impact on water courses whose physical characteristics have been greatly altered, including the Los Angeles River, Rio Hondo, and the San Gabriel River. Construction impacts would be of greater concern along less-disturbed streams such as Lytle Creek and Cajon Wash. The pipeline ROW generally stays well away from Cajon Creek, where the speckled dace is found, and those parts of the creek that would be traversed by the pipeline via trenching are at the mouth of Cajon Wash where there is typically no surface expression of water.

The following mitigation measure would minimize the amount of sediments entering streams and reduce the impact on aquatic habitats.

Mitigation Measure

5.3.1-1 *Construction areas for stream crossings shall be located outside the stream channel. In addition, the width of the construction right-of-way shall be minimized where ephemeral streams must be crossed, and no waste construction materials shall be discharged into any drainage areas, channels, or washes.*

Implementation of this mitigation measure would reduce this impact to a *less-than-significant* level.

Impact

5.3.1-2 **Construction activities may result in a spill of fuel or lubricant used in the operation of construction equipment, which could damage aquatic or riparian habitat off site. In addition, in any places where drainages are spanned by the pipeline, debris or toxic**

substances used in construction and welding could fall into the channel, causing local or downstream impacts either immediately or in the future.

Although the volume of potential spills or inadvertent discharges would presumably be small, significant impacts could occur due to direct toxicity or damage to riparian habitats. The extent of the damage would be dependent on the size of the spill reaching a stream, physical characteristics of the stream, sensitivity of the organisms present, toxicity of the chemical spilled, and time of year. Nevertheless, even if discharges or spills occur during the dry season, toxic materials could enter the aquatic environment during the subsequent rainy season, or far in the future as the materials dissolve or degrade over time.

Mitigation Measure

5.3.1-2(a) *Fueling lubrication and maintenance of construction equipment shall not be permitted within 500 feet of streams. Equipment shall be checked by Cajon Pipeline Company at least once a day for leakage, and leaking equipment shall be retired from use until repaired.*

5.3.1-2(b) *Any soil contaminated by leakage of fuel or lubricants from construction vehicles shall be removed, treated, and disposed of in a registered landfill. The ground surface shall then be restored to its pre-construction condition, including revegetation, consistent with the Erosion and Sediment Control Element of the COM Plan.*

Implementation of this mitigation measure would reduce this impact to a *less-than-significant* level.

Impact

5.3.1-3 **Pipeline construction will result in the removal of up to 630 acres of common native plant communities, not including staging areas, along the portion of the proposed pipeline that passes through non-urbanized or lightly urbanized habitats.**

Construction procedures along the 70-foot-wide right-of-way, including trenching, stockpiling backfill, pipe assembly, and equipment movement would result in the removal or crushing of plants within the ROW. Botanical surveys indicate that, other than a very small area of riparian habitat, the proposed ROW does not traverse scarce sensitive plant communities. The rapidity with which revegetation and full habitat restoration occurs depends on the type of plant community disturbed. Typically, wetter communities recover faster, while arid desert communities have a slower growth and recovery rate.

Reseeding with native species would increase the rate of return to pre-disturbed conditions and restoration of wildlife habitat values. In addition, revegetation would decrease the rate of soil erosion. Within the desert scrub habitats, many plant species could resprout from clipped or crushed individuals if the root systems remain intact. This hastens the reestablishment of wildlife habitat.

Removal of California desert native plants is regulated under the California Desert Native Plants Act. The act specifies which native plants may or may not be harvested. A permit from the respective County jurisdiction is required to authorize the harvesting, transporting, or possessing of native plants. Construction clearing would require such a permit, particularly for the case of *cacti.*

Mitigation Measure

5.3.1-3(a) *A pre-construction meeting to be attended by project management staff, site foremen, a qualified biologist, and biological monitor, shall be held. At this meeting, avoidance and minimalization of vegetation impacts both within and outside the ROW will be discussed to ensure that the construction management team are aware of sensitive areas and are educated in areas to be avoided, and means of reducing impacts.*

5.3.1-3(b) *Native species shall be used to revegetate areas disturbed by the project as described in the COM plan (See Mitigation Measure 5.2.1-1(c)). Representatives of BLM and USFS shall be consulted for advice on, and approval of, the list of species and procedures to be used for revegetation of the different habitats to be affected.*

5.3.1-3(c) *The proponent shall procure permits from the Agricultural Commissioner of the respective County and permission of the land owner prior to the removal of any cacti or Joshua Trees. Specimens up to 7 feet in height shall be relocated outside of the ROW by appropriate techniques.*

5.3.1-3(d) *Spoil material from trenching and grading activities shall be salvaged. This will allow preservation of seedbank material in areas of natural vegetation, including stream and wash crossings. A double windrow method shall be used to separate topsoil from the remaining spoil material. Topsoil shall be bladed to the outside of the spoil pile. Replacement of spoil, then topsoil, will be achieved with an auger or other suitable equipment. The use of these types of equipment will reduce impacts to natural habitats in the spoil area of the construction zone.*

5.3.1-3(e) *Sensitive plant communities as identified by the BLM and USFS which may include the macrophytic community or riparian communities shall be flagged and avoided during construction.*

5.3.1-3(f) *Use of the ROW in creosote and saltbrush scrub shall be limited to crushing where topography allows, and when no fill or excavation is required. Disturbances for individual activities, such as lay-down, maintenance, etc. shall be located adjacent to each other within the ROW to minimize concentrated disturbances.*

5.3.1-3(g) *A BLM field biologist shall be present onsite during the initial ROW preparation to determine areas requiring minimal acceptable clearance procedures.*

5.3.1-3(h) *A BLM field biologist or other qualified BLM personnel shall be present onsite during the initial ROW preparation to determine areas requiring minimal acceptable clearance procedures.*

5.3.1-3(i) *Joint inspection of the ROW by the proponent and the responsible or lead agency shall be conducted on federal lands to monitor the success and maintenance of erosion control measures and revegetation programs on federal lands for 5 growing seasons or for a period determined by the lead federal agency. This monitoring program would identify problem areas and corrective measures to ensure vegetation cover and erosion control. Certification of successful revegetation and erosion control will be determined by the lead federal agency.*

Implementation of this mitigation measure would reduce this impact to a *less-than-significant* level.

Impact

5.3.1-4 Construction of the Cajon Terminal would eliminate an estimated maximum of 20 acres (or much more area if impacts extended outside the ROW) of the soil crust microcommunity in which Mohave spineflower occurs.

Although Mohave spineflower is at present only on a "watch list" for plants whose habitat is declining at an alarming rate, it is rare or extirpated in much of its range (e.g., Los Angeles County). It has been suggested that it may respond well to minor disturbance of the desert soil, but definitive information is lacking. The ecological significance of the microphytic crust community is not known. If the acreage of impact upon this habitat were limited to the actual project footprint, it would be less than significant in the context of the environs of the northern terminus of the pipeline, but significant impacts could occur if machinery or workers' private or recreational vehicles were driven outside the ROW.

Mitigation Measure

5.3.1-4(a) *A map for the proposed staging area and turnarounds for the northernmost 25 miles of the pipeline route shall be submitted to the BLM for approval before construction is initiated to ensure that staging areas and turnarounds are within the ROW, the tank farm or existing roadways and cleared areas. The BLM will verify that only the working right of way and existing access points and previously cleared areas will be utilized.*

5.3.1-4(b) *The limit of Cajon Terminal farm shall be fenced, and the boundary of the ROW staked and flagged. Construction and private vehicles shall not be driven outside these boundaries.*

Implementation of this mitigation measure would reduce this impact to a *less-than-significant* level.

Impact

5.3.1-5 Construction along the pipeline route will result in the death or displacement of common and sensitive wildlife species along the ROW.

Small mammals and reptiles could be killed or injured by habitat clearing, earth removal, and equipment movement. Other species with greater mobility would be temporarily displaced by construction activities. Successful implementation of the habitat restoration plan would ensure that this impact upon populations of most of the species affected would be temporary, (except the impact on the spadefoot toad) and that the ROW would be recolonized by them once construction is complete.

Temporary impacts would occur on an estimated five to ten Bell's sage sparrow territories, one yellow warbler territory, and possibly upon one golden eagle nesting territory (although several active railroad tracks are closer to the nest than is the proposed ROW.

Construction impacts vary depending on the season. During winter, construction in areas inhabited by waterfowl and marsh birds may force birds to less favorable locations. Construction may also result in nest abandonment in areas adjacent to the ROW. This would be of greatest concern adjacent to riparian habitats, particularly at M.P. 63.5 where suitable riparian habitat is present for least Bell's vireo. Individuals of common and/or sensitive terrestrial species of amphibians and reptiles could become trapped in ditches, holes, or construction materials.

The cleared ROW may act as a barrier to dispersal and may fragment the habitats of previously undisturbed areas. Impacts are considered significant if animals are displaced from critical habitats or at critical times (eg., nesting areas). Temporary displacement may result in death if an essential component, or access to an essential component such as a den, resting, or cover sites are destroyed. Construction activities could also reduce access to food and water for many species. Providing cover for displaced small mammals and reptiles may reduce stress and exposure to predation.

Mitigation Measure

5.3.1-5(a) *During construction where large quantities of brush is cleared, the slash shall be temporarily piled just outside the ROW, and then spread over the ROW to provide cover for displaced animals.*

5.3.1-5(b) *For areas with moderate to high quality habitat, from M.P. 0 to M.P. 70, the length of construction spreads shall be less than 1,000 feet to allow wildlife to migrate to undisturbed areas.*

5.3.1-5(c) *No construction shall occur within the Baldy Mesa area, especially on National Forest lands, from March 1 through July 15, to avoid impacts upon breeding Bell's sage sparrows.*

5.3.1-5(d) *No construction shall occur on National Forest land from Highway 138 south to Sycamore Flats, from January 1 through July 31, to avoid disturbing Golden Eagles breeding.*

5.3.1-5(e) *No construction shall occur on National Forest lands from SR-138 south to Glen Helen area, from April 1 through June 30, to avoid impacting Yellow Warblers breeding.*

5.3.1-5(f) *No construction shall occur in areas adjacent to riparian habitat (M.P.63.5) from April 1 through June 30* during the nesting period of the least Bell's vireo.

5.3.1-5(g) *To the extent feasible, open steep-walled ditches and holes shall not be left unattended for prolonged periods during construction, but shall be covered flush with the ground surface. Open pipe shall be capped and/or stored away from natural habitat areas. Animals trapped in holes or ditches shall be carefully removed or provided with a means of escape such as an inclined board or branch.*

Implementation of this mitigation measure would reduce this direct impact to a *less-than-significant* level, although it would remain *cumulatively significant* in the context of the ongoing regional increase in human disturbance of habitat and species.

Impact

5.3.1-6 Pipeline construction could eliminate western spadefoot toad breeding areas, or could destroy individuals burrowed in the ground outside the breeding season.

The western spadefoot toad could occur in Cajon Wash, Lytle Wash, or in parts of alluvial scrub habitats south of Lytle Creek. Reptile and amphibian surveys were conducted during the optimal season for most species, which is later than the activity season for spadefoot toad (February through April). The very small, ephemeral ponds in which it breeds can be very difficult to detect outside of the rainy season. A focused survey during the activity season would be necessary to determine whether the species is present within the ROW.

Mitigation Measure

5.3.1-6(a) *A survey for the western spadefoot toad shall be carried out in suitable areas (Cajon Wash, Lytle Wash, and alluvial scrub habitats south of Lytle Creek) between February and April.*

5.3.1-6(b) *If this species is found within the ROW, either the ROW shall be rerouted to avoid breeding habitat, or, with the approval of BLM and USFS, the population shall be temporarily removed and housed off site, then reintroduced following habitat restoration.*

Implementation of this mitigation measure would reduce this potential impact to a *less-than-significant* level.

Impact

5.3.1-7 **Construction of the proposed pipeline will result in the permanent elimination of approximately 25 acres of Category 1 desert tortoise habitat for Cajon Terminal construction and a temporary elimination of approximately 385 acres along the length of the ROW. Construction could also result in the inadvertent death of, or injury to, individual tortoises.**

Potential and inevitable construction impacts upon desert tortoises and their habitat include vehicle-related fatalities and injuries, the loss of foraging areas, disturbance of areas used for nesting, cover, and/or drinking, and the disturbance or collapse of existing burrows. Of the total 410 acres which will be disturbed, approximately 123 acres has already had extensive habitat disturbance from past utility construction. The remaining 287 acres has little or no existing habitat disturbance. Pursuant to the Federal Endangered Species Act, Section 7, consultation will be carried out and is expected to culminate in compensation and the approval and implementation of a mitigation and monitoring plan for impacts upon this endangered species. Some appropriate mitigation measures, subject to additions and modifications in the course of the consultation process, are included here.

Mitigation Measure

5.3.1-7(a) *Portions of the ROW where tortoises or their sign were found during the preliminary survey shall be surveyed according to the most recent published protocol during a high activity season for the tortoise (late March through mid-June, or in September), and occupied burrows shall be hand-excavated by biologists, under federal permit and MOU from CDFG. Tortoises removed shall be placed in newly constructed burrows at least 150 feet from the boundary of the ROW and fenced in for up to one week to maximize the chance of adopting the artificial burrow.*

5.3.1-7(b) *Following pre-construction surveys and relocations, construction of the pipeline within tortoise habitat shall be restricted to October through March, when tortoises are hibernating.*

5.3.1-7(c) *A wildlife biologist with desert tortoise expertise, acceptable to the BLM, USFWS, and CDFG, will be present during construction. Tortoises encountered and observed will be handled in accordance with the appropriate established protocols as described in the Technical Appendix I (Biological Evaluation/Biological Assessment).*

5.3.1-7(d) *Funding as determined by the BLM and CDFG shall be provided for the rehabilitation of inadvertently injured tortoises.*

Implementation of this mitigation measure, Mitigation Measure 5.3.1-7, and all measures stipulated by the Section 7 consultation would reduce this impact to a *less-than-significant* level.

Impact

5.3.1-8 Construction along the pipeline route may result in disruption of disjunct populations of the zebra-tailed lizard.

A field survey was undertaken along the pipeline right-of-way during the months of May, June, and July 1992. This survey identified two small populations of the zebra-tailed lizard in the vicinity of the ROW: one in Cajon Wash and one in Lytle Wash. These populations of the zebra-tailed lizard are disjunct (isolated) from the main (desert) center of distribution of the species. These populations are therefore rare and unique in the areas of the San Bernardino Mountains crossed by the route, namely Lytle Canyon and Cajon Canyon washes.

The proposed construction activities may result in potentially significant impacts relating to effects of population reduction, habitat reduction, resource packing (emigration effects), and interruption of breeding and foraging activities.

As the distribution of the lizard population may change from the time of original survey, a further detailed focused survey would be necessary to determine the extent of impacts prior to construction.

Mitigation Measure

5.3.1-8 *A focused survey of the zebra-tailed lizard populations along the pipeline route shall be conducted to ascertain any changes in zebra-tailed lizard distributions and population mapping in the vicinity of the pipeline ROW in the Cajon and Lytle Creek Washes. If population levels are found adequate to ensure recolonization of the ROW following revegetation or population mapping demonstrates that the population are distant from the ROW then no further mitigation will be implemented; if they are not, additional specific mitigation measures will be developed in consultation with CDFG and USFWS and be implemented.*

Impact

5.3.1-9 Construction noise may affect wildlife species, especially birds and breeding amphibians, in habitats adjacent to the pipeline route.

Excess noise can result in masking and interference effects. Masking occurs when background noise levels make an auditory signal inaudible or changes its qualities, apparent location, or distinctiveness. Noise can interfere with the maintenance of contact between mated birds, warning calls signaling impending threats, feeding behavior, and the ability to detect predators.[1] This is of greatest concern in the vicinity of riparian habitat because of the observed and potential presence of a variety of sensitive bird species. This impact also pertains to the Baldy Mesa area, where the route passes through territories of Bell's sage sparrow. In addition, high noise levels during the night could disrupt amphibian breeding activity in the pipeline vicinity by obscuring or interfering with mating calling by frogs.

Mitigation Measure

5.3.1-9(a) *Along riparian areas (Cajon Wash, Lytle Creek, Whittier Narrows area), and the Baldy Mesa area, construction activity shall be restricted to mid-summer and fall to reduce potential impacts upon breeding birds. (See Mitigation Measure 5.3.1-5).*

5.3.1-9(b) *During the breeding season of vocal amphibians, from January 1 through March 31, construction in the vicinity of suitable breeding habitat shall be limited to the daylight hours.*

Implementation of this mitigation measure would reduce this impact to a *less-than-significant* level.

Impact

5.3.1-10 **The increased presence of people in remote areas increases the potential for wildlife harassment and illegal hunting and collecting.**

Increased accessibility could result in increased off-road vehicle activity. This could result in the destruction of plants and wildlife unable to avoid the vehicles. Implementation of the following mitigation measure will minimize the risks of affecting wildlife habitat, small mammals, reptiles, and sensitive plant communities in surrounding areas. This is important in all habitats along the northern half of the pipeline route.

Mitigation Measure

5.3.1-10(a) *Vehicle operation off the ROW shall be prohibited except where specified by the landowner or land management agency.*

5.3.1-10(b) *Mitigation Measures discussed in mitigation measure 5.2.1-1(d)(vi), a part of the Erosion and Sedimentation Control Element of the COM Plan will preclude illegal OHV activity within the National Forest boundary.*

5.3.1-10(c) *No firearms shall be allowed in the construction area. Employees shall be instructed that no hunting or collecting will be allowed. The names of any employees found to be violating these rules shall be provided to the appropriate agency.*

Implementation of these mitigation measure would reduce this impact to a *less-than-significant* level.

Impact

5.3.1-11 **Terrestrial plant communities and wildlife could be destroyed or damaged by an oil spill if the pipeline were to rupture or leak.**

Oil in soil can reduce the availability of water to plants and can also cause direct mortality through contact with oil. Direct contact with oil can result in reduced photosynthesis, loss of foliage, reduced nutrient levels, reduced flower and seed production, and toxic effects on cells. Impacts to trees and shrubs can be severe and irreparable if oil surrounds or enters the root system. Potential reestablishment of plants would depend on the amount of oil spilled. Indirect effects of an oil spill may result from clean up efforts including removal of top soil and clearing of oiled vegetation.

In general, oil spill impacts on terrestrial wildlife are greater when a spill enters a wetland or watercourse than if it remains in upland habitat. Waterbirds and aquatic mammals can be affected by ingestion of oil, physical contact with oil and loss of food or alteration of other habitat elements. Implementation of the following mitigation measure will minimize the risk that an oil spill could affect wildlife habitat, small mammals, reptiles, and sensitive plant communities in surrounding areas.

Mitigation Measure

5.3.1-11(a) *Refer to the Mitigation Measures recommended within Section 5.12 (System Safety and Responsibility) regarding details for spill prevention.*

5.3.1-11(b) *An Oil Spill Contingency Plan shall provide for the pipeline owner's financial responsibility for any clean-up on public lands, and will give the BLM or Forest Service final decision-making authority as to the completeness of any such clean-up. This plan shall be reviewed by the Emergency Response Review Committee. The committee shall provide recommendations to the Lead Agencies for implementation of the plan. This plan shall be finalized and approved by the Lead Agencies (BLM, USFS and City of Adelanto).*

5.3.1-11(c) *Automated block and check valves shall be installed at major stream crossings and reaches of streams where the route is parallel to the waterway (Refer to Mitigation Measure 5.2.1-5).*

Implementation of this mitigation measure would reduce this impact to a *less-than-significant* level.

Impact

5.3.1-12 **Damage to aquatic habitats and to many species dependent upon it could result from failure of the pipeline near a stream crossing and consequent discharge of oil into a watercourse.**

As with the previous impact, the severity of the impact would depend on the size of the spill, physical characteristics of the stream, cleanup and control techniques, and susceptibility to oil of the organisms present.

Oily substances can be harmful to organisms in several ways. An oil film on the surface of the water prevents gas exchange between air and water. In addition, oil may coat gill surfaces and interfere with gas exchange between blood and water, thus causing tissue deterioration. In sufficient quantities, it may result in oxygen depletion due to bacteriological degradation. Water soluble fractions (hydrocarbons, metals, etc.) in oil are also of concern. Salmonids and striped bass (*Morone saxatilis*) are known to be sensitive to water soluble fractions, while channel catfish and bluegill appear to be more tolerant. Oil may also kill larvae and eggs floating on the surface of the water and the planktonic plants and animals on which young and adult fish feed. Finally, oil may also reduce fish reproductive capabilities by rendering spawning grounds unusable.

Areas of primary concern along the proposed Cajon Pipeline route include Cajon Creek and San Gabriel River. The Santa Ana speckled dace, a California species of special concern inhabits the Cajon Creek. In addition, the Cajon Creek has been identified as a preferred site for the reintroduction of the federally endangered unarmored threespine stickleback (*Gastero aculeatus williamsonii*). Suitable habitat for speckled dace occurs within Cajon Creek parallel to a portion of the pipeline route, but the documentation of field surveys carried out in 1992 for this project indicates that the main present population of speckled dace occurs well upstream from the pipeline route, and that the pipeline is generally situated well away from Cajon Creek, or along slopes that would drain away from the stream, and concludes that, for these reasons, the potential impact upon this species from a spill resulting from pipeline leakage or rupture is correspondingly lower than would otherwise be the case.

Mitigation Measure

5.3.1-12 *Implementation of Mitigation Measures 5.3.1-11(a), (b) and (c), and 5.2.1-6.*

Implementation of this mitigation measure would reduce this impact to a *less-than-significant* level.

Impact

5.3.1-13 **Degradation of terrestrial habitats, or of aquatic habitats downslope from pipeline construction and staging areas, could result from spills or discharge of hazardous materials used in construction and welding.**

Accidental spills or intentional discharges of large or small quantities of hazardous materials required for welding and other construction activities could have detrimental effects upon either terrestrial or downslope aquatic habitats, either immediately or in the future.

Mitigation Measure

5.3.1-13(a) *Material Safety Data Sheets for all hazardous materials to be used on portions of the pipeline route that cross public lands shall be submitted to the agencies with jurisdiction over those lands.*

5.3.1-13(b) *All hazardous materials to be used shall be stored and used properly in all construction and staging areas.*

5.3.1-13(c) *An Oil Spill Contingency Plan for prompt and complete remediation of any spills that could occur in construction or staging areas shall be submitted to the Lead Agencies (BLM, USFS and the City of Adelanto) prior to the initiation of construction activities, and shall be implemented in the event of any spills. This plan shall be reviewed by the Emergency Response Review Committee. The committee shall provide recommendations to the Lead Agencies for implementation of the plan. This plan shall be finalized and approved by the Lead Agencies (BLM, USFS and City of Adelanto).*

Implementation of this mitigation measure would reduce this impact to a *less-than-significant* level.

5.3.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative would result in similar impacts to desert habitats, impacts due to loss of the soil crust microcommunity in which Mohave spineflower occurs and other sensitive species, such as the zebra-tailed lizard and riparian birds. Construction of the pipeline would result in the temporary or permanent elimination of approximately 25 acres of Category 1 desert tortoise habitat for Cajon Terminal construction and approximately 294 acres for construction along the length of the ROW. The total 219 acres occurs in areas where there is little or no existing habitat disturbance. Construction could also result in the inadvertent death of, or injury to, individual tortoises.

5.3.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

As previously stated, no biological investigation have yet been undertaken for the Sycamore South Segment Alternative between M.P. 73 and M.P. 74 of the proposed route. Should other prevailing environmental constraints dictate that the Sycamore South Segment Alternative become the preferred Cajon Pipeline alignment, a full field study should be undertaken and approved prior to issuance of any construction permits.

5.3.4 M-70 PIPELINE

Approximately 54 acres of vegetation may be potentially affected by the proposed M-70 Pipeline. Implementation of a site specific revegetation plan would mitigate this impact. Sensitive plant species on the ROW would be removed and replanted. Potential impacts on general animal life during construction activities would consist of temporary disturbances resulting from increased noise and activity levels in construction areas, and displacement of wildlife species from construction areas. In some cases, construction activities may result in injury or death to wildlife. Since construction hours would generally be between 7:00 AM and 5:00 PM, nocturnal wildlife would not be affected.

Construction activities could potentially affect sensitive wildlife species, including the California condor badger, Tehachapi pocket mouse, San Diego horned lizard, Santa Ana sucker, and the unarmored three spine stickleback. Contacting the California Condor Research Center prior to construction and keeping a live channel open during trenching would mitigate this impact. Impacts to the badger and pocket mouse populations are not anticipated to be significant. The pipeline route crosses within the boundaries of an area proposed for the least Bell's vireo critical habitat designation by the U.S. Fish and Wildlife Service near the Santa Clara River. Noise from construction activities could potentially affect nearby habitat. These impacts could be reduced by correct project scheduling. Potential temporary loss of habitat could also occur for the slender-horned spineflower, San Fernando Valley chorizanthe, Nevin's barberry, Peirson's morning glory, and many-stemmed dudleya. This impact could be reduced to a less-than-significant level by implementation of a revegetation plan.

5.3.5 PACIFIC PIPELINE

Construction of the Pacific Pipeline would affect riparian, 0.5 mile (3 acres) of wetland, and 0 to 2.9 miles (0 to 17 acres) of oak woodland vegetation. The riparian and woodland losses would be associated with the 50 to 100 feet wide right-of-way required for construction. The total surface disturbance on all sensitive plant communities would be about 2.9 to 5.8 miles, or 18 to 50 acres, or 2 to 5 percent of the total ROW length. Construction activities could potentially affect sensitive plant species, including the Gaviota tarplant, Nevin's barberry, San Fernando spineflower, slender-horned spineflower, and Santa Susana tarplant. Implementation of the proposed construction techniques and the Erosion Control, Revegetation, and Landscape Plan are anticipated to mitigate this impact.

Animal life inhabiting the communities described in Section 5.3.3 would also be affected by construction. Construction activity at stream crossings could affect a number of aquatic and semi-aquatic species: the California brackish water snail, California red-legged frog, Hammond's two-striped garter snake, southwestern pond turtle, tidewater goby, arroyo southwestern toad, and the unarmored threespine stickleback. Construction activities generating noise, habitat disruption and removal of streamside vegetation may affect the following species: California black-tailed gnatcatcher, least Bell's vireo, Pacific kangaroo rat, pallid bat, tricolored blackbird, western yellow-billed cuckoo and willow flycatcher. Construction activities could affect species that depend upon salt marshes for foraging. The only endangered species that could be affected are the light-footed clapper rail, Belding's savannah sparrow, and the southern marsh harvest mouse. The following species could also be affected: the coastal cactus wren, monarch butterfly, San Diego horned lizard, and the Los Angeles pocket mouse. In addition to the mitigation measures relating to revegetation, limitations on construction times would be implemented, and an onsite qualified biologist would be retained for wildlife mitigation measures. This is anticipated to mitigate impacts to wildlife.

5.3.6 FOUR CORNERS PIPELINE

Use of the Four Corners Line 90 Pipeline would require construction of three new heating stations and four new pump stations. These facilities are likely to require a total of approximately 20 acres within the vicinity of the pipeline route. This construction would not result in substantial loss of habitat or affect sensitive species or wildlife. Pipeline operation could potentially affect any of the biological resources along the total 185-miles of the pipeline. Pipeline rupture at Whitewater River, San Gorgonio River or

Temescal Wash could have potentially significant impacts to surrounding and downstream wildlife and vegetation.

5.3.7 NO PROJECT

The No Project alternative would not require any construction. It is anticipated that increased importation of crude oil would occur from outside of the United States. This would likely occur through increased marine tankering. The risk of an oil spill occurring in coastal waters would be increased and would result in significant potential impacts to the coastal marine environment.

ENDNOTES

1. San Diego Association of Governments and Recon, *Draft Comprehensive Species Management Plan for the Least Bell's Vireo*, 1990.

5.4 AIR QUALITY

5.4.1 CAJON PIPELINE

This section assesses the air quality impacts anticipated to result from the proposed Cajon Pipeline project. The short-term construction impacts and long-term operational impacts are discussed.

Standard of Significance

According to CEQA standards, a project would be considered to have a significant adverse impact on the environment if:

- Criteria air pollutant emission levels would violate any ambient air quality standard;
- Substantial contributions are made to an existing or projected air quality violation; or,
- Sensitive receptors were exposed to substantial pollutant concentrations.

Southeast Desert Air Basin

For purposes of this EIS/EIR, significance is defined as an increase in air pollutant emissions for a non-attainment pollutant which would require a permit if the project was a stationary source. For the Southeast Desert Air Basin (SDAB), emissions of ozone precursors which would exceed the standards proposed in the New Source Review (NSR) rule, or those exceeding the Prevention of Significant Deterioration (PSD) standards, would constitute a significant impact. The NSR thresholds currently in effect are:

Carbon Monoxide (CO_2)	750 lbs/day
Hydrocarbons (ROC)	250 lbs/day
Nitrogen Oxides (NO_X)	250 lbs/day
Particulates (PM_{10})	250 lbs/day

South Coast Air Basin

The non-attainment pollutants in the South Coast Air Basin are ozone, nitrogen dioxide, carbon monoxide, and particulates. The SCAQMD has established daily emission threshold criteria levels to determine whether or not air quality impacts and mitigation measures should be analyzed in an EIS/EIR. These criteria are:

Carbon Monoxide (CO_2)	550 lbs/day
Reactive Organic Gases (ROG)	55 lbs/day
Nitrogen Oxides (NO_X)	55 lbs/day
Particulates (PM_{10})	150 lbs/day
Sulfates (SO_x)	150 lbs/day

IMPACTS AND MITIGATION MEASURE

Impact

5.4.1-1 Air pollutant emissions would result from the operation of construction equipment on- and off-site, from disturbed soil, and from transport of workers, equipment and materials.

Air pollutant emissions from construction would result from a variety of activities. These activities and their related daily emissions are presented in Table 5.4.1-1. Among the sources of emissions would be fugitive dust and construction equipment exhaust associated with grading, trenching, pipewelding and laying, backfilling and paving, specialty boring, and mobile sources for transportation of equipment, workers and materials. Construction emissions related to the proposed project assume that two spreads would be operating simultaneously. The construction emissions from the Cajon Pipeline project would exceed NSR thresholds adopted by the San Bernardino County Air Pollution Control District (SBCAPCD) and South Coast Air Quality Management District (SCAQMD). Based on the construction management practices being proposed and compliance with applicable air quality rules, air quality impacts due to construction of the pipeline are significant and unavoidable as mitigation measures would not be able to reduce these impacts to a less-than-significant level.

Among the proposed construction management practices that would be employed are the use of diesel engines with injection retard and gasoline engines with catalytic converters for all construction equipment. Unnecessary idling of equipment would be controlled and minimized by the project sponsor. The project sponsor would also require that contractors properly tune all gasoline-fired internal combustion engines. Fugitive dust from disturbed soil would be reduced by watering of the site twice daily with suspension of trenching and stockpiling during high wind episodes. Revegetation of disturbed soils would begin immediately after construction. Trucks exporting excavated soil to landfills would be required by the project sponsor to have covers to minimize PM_{10} emissions during transport. Particulates would also be controlled by a requirement to cover all soil stockpiles during non-work hours with frequent watering of these stockpiles during working hours. Emissions from the transport of workers would be reduced by providing a shuttle service from a designated staging area. Among other SBCAPCD air quality regulations that the project sponsor would be required to comply with are:

Regulation II, Rule 201 - Permit to Construct
Regulation IV, Rule 401 - Visible Emissions
Regulation IV, Rule 402 - Nuisance Emissions
Regulation IV, Rule 403 - Fugitive Dust Emissions

Among the SCAQMD air quality regulations that the project sponsor would be required to comply with are:

Regulation II, Rule 201 - Permit to Construct
Regulation IV, Rule 401 - Visible Emissions
Regulation IV, Rule 402 - Nuisance Emissions
Regulation IV, Rule 403 - Fugitive Dust Emissions
Regulation IV, Rule 442 - Usage of Solvents

TABLE 5.4.1-1 (a)
CAJON PIPELINE PROJECT CRITERIA POLLUTANT EMISSIONS

Activity	Emissions (lbs/day)				
	ROC	NOx	SO_2	CO	PM_{10}
CONSTRUCTION[1]					
Rural Construction					
Grading	3.32	70.89	7.09	36.89	3.81
Trenching	7.78	95.84	9.49	62.98	7.11
Pipewelding and Laying	42.58	197.43	19.65	746.05	12.45
Backfilling and Paving	8.63	105.72	8.97	99.81	6.96
Off-site Emissions	5.15	19.68	1.67	48.11	20.12
Fugitive Emissions					332.00
Daily Totals (Rural)	67.46	489.56	46.87	993.84	382.45
Urban Construction					
On-site Emissions	34.28	189.18	17.52	454.12	15.52
Off-site Emissions	3.23	14.38	1.52	35.24	17.69
Fugitive Emissions					39.80
Daily Total (Urban)	37.51	203.56	19.04	489.36	73.01
OPERATION					
Storage Tanks					
Standing Loss	25	-	-	-	-
Working loss	58	-	-	-	-
Fugitive Emissions[2] (pumping station)	10				
DAILY TOTAL	93	-	-	-	-

[1] For one construction spread. For assumptions see Technical Appendix II.

[2] Calculations completed for All-American Pipeline Pump Station, a station of similar size and construction.

Sources: EIP Associates and Proposed M-70 Pipeline Replacement DEIR, 1990, pg. 4.2-9 to 4.2-13.

TABLE 5.4.1-1 (b)
CAJON PIPELINE PROJECT TOXIC AIR EMISSIONS

Toxic	Toxic Emitted (lbs/day)	Screening Threshold (lbs/day)	Toxic	Toxic Emitted (lbs/day)	Screening Threshold (lbs/day)
DEISEL EQUIPMENT RELEASES					
Associated with VOC			Associated with PM10		
Acetaldehyde	1.248	0.240	Arsenic	0.0001	0.0002
Benzene	0.727	0.020	Bromine	0.0005	0.0200
Chlorobenzene	0.029	0.260	Cadmium	0.0030	0.0001
Ethylebenzene	0.025	13.300	Chromium	0.0004	0.000004
Formaldehyde	3.692	0.040	Lead	0.0014	0.0200
Xylene	0.378	4.000	Manganese	0.0010	0.0100
Napthalene	0.025	1.600	Nickel	0.0007	0.0020
Toluene	0.735	72.000	Mercury	0.0011	0.0030
			Phosphorous	0.0055	0.0010
			Selenium	0.0002	0.0500
			Zinc	0.0182	0.5000
			Ammonia	0.1498	4.8000
GASOLINE EQUIPMENT					
Associated with VOC			Associated with PM_{10}		
Acetaldehyde	1.1415	0.2400	Bromine	0.0043	0.0200
Benzene	2.2084	0.0200	Chromium	0.0043	0.00004
Formaldehyde	1.7151	0.0400	Manganese	0.0043	0.0100
Hexane	2.5927	5.8000	Nickel	0.0043	0.0020
Xylene	2.0879	4.0000	Zinc	0.0043	0.5000
Propylene	5.1796	0.1400			
Toluene	6.8144	72.000			

Source: EIP Associates.

Toxic air pollutants are also emitted by construction equipment. Toxic air emissions were calculated from the total pounds of ROC and PM_{10} emitted from each type of equipment, whether it is diesel or gasoline. For each pound of ROC and PM10 there is an associated emission by weight fraction of various chemicals of concern. The approximate releases are listed in Table 5.4.1-1(b). These amounts can then be compared to screening thresholds. The screening thresholds are based on exposures from a stationary source (short stack) over a human life span of 70 years. The thresholds are therefore very conservative. In the absence of any other significance criteria these have been utilized to identify any possible areas of concern. It must be noted however that these emissions are mobile sources, which are dispersed through a construction working area which is not localized and is subject to high winds. A number of species were identified as of concern. The magnitude of the exceedance of the threshold is of the order of 100. Given the environment in which these pollutants would be released and the mobile nature of the sources, toxic air pollutants emissions are not considered significant and warrants further study.

Mitigation Measure

5.4.1-1 (a) *A Dust Control Plan shall be submitted to the San Bernardino County Air Pollution Control District and the South Coast Air Quality Management District for approval prior to construction. The plan shall include measures for watering of unpaved areas to reduce particulate emissions, moistening of vehicle loads, stabilization of stock piles, and inspection of emission control systems on heavy equipment.*

5.4.1-1 (b) *A shuttle service shall be provided for construction workers from a designated staging area to the work site. This shuttle service shall provide an average vehicle ridership of 1.5 AVR for construction employees.*

5.4.1-1 (c) *All grading operations on the right-of-way shall be suspended when wind speeds (as instantaneous gusts) exceed 25 miles per hour or in the event of a first or second stage smog alert. The wind speed and air quality conditions shall be monitored by the supervising project engineer.*

5.4.1-1 (d) *In all graded areas, in particular the remainder of the graded right-of-way which has been inactive for 96 hours shall be covered by a District approved chemical soil stabilizer.*

Impact

5.4.1-2 **Pipeline operation would not result in significant air emissions.**

Air pollutant emissions from the operation of the pipeline would result from storage and withdrawal losses from the oil storage tanks and fugitive emissions (see Table 5.4.1-1 and Technical Appendix II) and would impact air quality in the SDAB. Fugitive emissions are emissions inadvertently emanating from a facility via a valve, connection, seal leak etc. or more generally defined as emissions which are unintentional, without control of rate or direction.[1] These emissions are also quantified in Table 5.4.1-1. The tanks would be operated to comply with SBCAPCD Regulation IV, Rule 462 - Organic Liquid Loading and Regulation IV, Rule 463 - Storage of Organic Liquids.

Fugitive emissions from pumping stations can vary depending upon the type of crude, the number of valves and flanges which are above ground and the type of pumps used. An estimate of fugitive losses can be obtained by examining a pump station of similar size and construction. URS Corporation has made estimates for the Gaviota Pumping Station of the All-American Pipeline, a pump station of similar size to that proposed at Adelanto (Technical Appendix II). The pump station would emit an average 4.84 lbs/day of ROC due to fugitive losses. Fugitive losses are fairly steady, and the worst-case scenario is estimated to be 4.94 lbs/day. For the Cajon Pipeline, two pump stations are required. Therefore, fugitive emissions for the proposed project's pump stations would total approximately 9.88 lbs./day.

The proposed project pumping stations at Cajon Terminal and Adelanto would use electric pumps.[2] Emissions from the operation of the electrical pumps as well as other electrically operated equipment required in the operation of the pipeline would occur remotely at the utilities supplying the power. The utilities supplying power to this project are assumed to be permitted. Therefore, emissions from utilities supplying electrical power to the proposed pipeline would not result in a significant air quality impact.

Heating of the crude oil to facilitate pumping would occur prior to the oil entering the Cajon Pipeline by an existing permitted heater. Therefore, no additional air pollutant emissions from crude oil heating would result from the operation of Cajon Pipeline. Gate valves associated with the pipeline are buried and would not emit any air pollutants.

The total emissions from storage and withdrawal losses and fugitive emissions are shown in Table 5.4.1-1(a). These emissions would occur within the SDAB and are below the NSR threshold of 250 lbs./day. These releases would, therefore, result in a less-than-significant impact to air quality.

Mitigation Measure

5.4.1-2 *None required*

Impact

5.4.1-3 **An accidental oil spill would result in release of hydrocarbon vapors immediately following a spill.**

Vapors released at the time of the spill could include methane, ethane, propane, butane, and trace amounts of hydrogen sulfide. The duration of the potential impact would be very brief and specific to the immediate rupture site. The potential for ignition is slight. However, crude oil typically has a very high flash point, requiring an intense energy for ignition.

Following the spill, cleanup operations would be necessary and would result in operation of diesel and gasoline equipment and could also result in traffic congestion and necessary detouring of vehicles. These emissions are not readily quantifiable as it is dependent upon rupture location and would be largely conjecture. Due to the temporary nature of the cleanup activities, potential air impacts from an oil spill are considered to be *a less-than-significant impact.*

Mitigation Measure

5.4.1-3 *None required.*

5.4.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative would result in similar air quality impacts as addressed in Section 5.4.1 (Impacts 5.4.1-1 through 5.4.1-3).

5.4.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative would result in similar air quality impacts as addressed in Section 5.4.1 (Impacts 5.4.1-1 through 5.4.1-3).

5.4.4 M-70 PIPELINE

Construction

Standard construction management practices would be followed to minimize emissions from construction activities, both on-site and off-site. Emissions from the M-70 Pipeline project are expected to be consistent with the Air Quality Management Plan (AQMP) for the South Coast Air Basin (SCAB) (Table 5.4.5-1). They are temporary and transient and therefore would not affect long-term air quality management goals. The construction emissions would be basin-wide and insignificant compared to baseline emissions in the SCAB. Due to the temporary nature of construction emissions, they would not generally be subject to mitigation by the rules and regulations of the KCAPCD or SCAQMD, except to the extent, if any, that an air quality nuisance may be created. No environmental impact is expected for the potential air toxics from the pipeline joint coating.

TABLE 5.4.5-1
M-70 Pipeline Daily Emissions Per Typical Spread

Activity	Emissions (lbs/day)				
	ROC	NOx	SO_2	CO	PM_{10}
CONSTRUCTION[1]					
Grading	61.7	124.6	15.7	153.3	291.7
Trenching	54.5	69.1	8.7	136.0	22.7
Pipewelding and Laying	160.7	87.9	10.6	381.5	55.2
Backfilling and Paving	243.0	183.8	20.4	1324.5	58.8
On and Off-site Transport	53.5	60.7	7.1	135.8	47.9
DAILY TOTAL	573.4	526.1	62.5	2,131.1	476.3
Mobile Sources	11.0	54.8	3.3	63.4	3.7

[1] Sources: Proposed M-70 Pipeline Replacement DEIR, 1990, pg. 4.2-9 to 4.2-13.

Operation

The three existing crude oil storage tanks at the Lebec Station would remain in service. No new tankage would be added for the proposed pipeline. Also no additional heaters or heating capacity is proposed. Fugitive emissions are expected to reduce over the present operations due to the lower vapor pressure of the pipeline operation. Overall, operation of the proposed M-70 Pipeline project would result in a net reduction in emissions. This would have a beneficial impact on existing air quality.

5.4.5 PACIFIC PIPELINE

The Pacific Pipeline project would produce emissions of criteria (i.e., regulated) air pollutants in two separate phases: construction and operation. During construction, project emissions would result primarily from the construction equipment.

Construction

The construction and operation of the Pacific Pipeline project could affect air quality in all jurisdictions (i.e., the SBCAPCD, the VCAPCD, and the SCAQMD). However, pipeline construction emissions would be of short duration and spread out over the approximately 170-mile length of the project. Mitigation measures would be incorporated to minimize emissions during construction. Thus, construction would not result in any long-term significant air quality impacts. Fugitive reactive organic carbon emissions from pipeline operation are very small and not regarded as significant. Indirect emissions would occur from extra power production and possibly from additional refining requirements of the Outer Continental Shelf (OCS) crude. These emissions are subject to existing permits of the power plants and refineries and are the responsibility of these facilities. These facilities would not be allowed to exceed previously approved permit limits for air emissions. Estimated emissions from the construction of the Pacific Pipeline are shown in Table 5.4.6-1.

Operation

During operation, emissions would result in the form of fugitive hydrocarbons escaping from valves, flanges, seals, and maintenance operations. However, most operating emissions would involve indirect emissions from the power grid and the refinery increment (Table 5.4.6-2).

Table 5.4.6-1
Pacific Pipeline Project Emissions

Location	Total Emissions (tons)				
	ROC	NOx	SO2	CO	PM10
Santa Barbara County					
Pipeline	30.1	56.3	2.5	812.0	24.9
Pump Stations (2)	1.0	3.1	0.1	29.8	6.9
Ventura County					
Pipeline	6.0	10.7	0.5	164.9	5.3
Pump Station (1)	0.5	1.6	0.04	14.9	3.5
Los Angeles County					
Pipeline	39.4	82.2	3.6	1008.5	26.9
TOTAL	77.0	153.9	6.7	2030.1	67.4

Source: Pacific Pipeline Company.

Table 5.4.6-2
Pacific Pipeline Indirect Project Emissions

Location	Total Emissions (tons)				
	ROC	NOx	SO2	CO	PM10
Power Grid (Pumping)	0.2	13.4	2.2	3.7	0.7
Refinery Increment (crude change)	9.5	227.8	48.9	73.6	54.9
TOTAL	9.7	241.2	51.1	77.3	55.6

SOURCE: Pacific Pipeline Company.

5.4.6 FOUR CORNERS PIPELINE

The Four Corners Line 90 Pipeline would require construction of four new pump stations and three new heater stations. Limited construction emissions from grading would occur at these sites. Project emissions would result from construction and operation of pump and heater stations. NO_x and ROC emissions are due to the operation of heaters and turbine pump drives. A total of 33.5 lb/hr NO_x and 5.65 lb/hr ROC (or 147 tons/yr NO_x and 25 tons/yr ROC) would occur due to Line 90 operation.[3] These emissions would occur in the Southeast Desert Air Basin. The NO_x emissions would exceed the NSR thresholds currently in effect and result in significant air quality impacts.

5.4.7 NO PROJECT

The No Project alternative would not involve any construction. It is anticipated that increased importation of crude oil from outside of the United States would occur via marine tanker. Increased port activity would be anticipated at Long Beach Harbor with associated increases in emissions in operation of valves, flanges, and seals. This would not represent a significant impact on existing air quality conditions.

ENDNOTES

1. American Petroleum Institute, Volume I - Fugitive Emissions from Petroleum Production Operations, API Publication No. 4322, March, 1980.

2. Assumption of natural gas fired heaters based on Celeron/All American and Getty Pipeline EIR, Appendix A, pg. A-13, Twelve-Gauge Pump Station, EPA AP-42 emission factor.

3. Arthur D. Little, Final Report, Santa Barbara County, Chevron Pt. Arguello Field SEIR, Air Quality Analysis, November 1990, p.B-1: Pipeline Emissions Summary.

5.5 NOISE

5.5.1 CAJON PIPELINE

This section assesses the noise impacts anticipated to result from the proposed Cajon Pipeline project. The short-term impacts of stationary and mobile construction-related noise and the long-term impacts due to operational vehicular traffic are discussed.

Standards of Significance

Based on professional judgement and Appendix G of the CEQA Guidelines, noise impacts are considered significant if one or more of the following conditions would result from implementation of the proposed project:

- Substantial increases in the ambient noise levels of adjoining areas;
- Substantial increases in noise levels in areas of sensitive receptors;
- Generation of noise that would conflict with county or city noise ordinances;
- Generation of noise levels in conflict with state and local guidelines for long-term exposures, interior noise levels, and 24-hour averages. Specifically, noise emissions exceeding a L_{dn} level of 60 dBA at the nearest noise sensitive receptor (California Office of Noise Control).

Evaluation of the significance of project impacts in relation to these criteria is provided in the following discussion.

Noise Generators

Operation Noise

Operating noise would be confined to a limited area, but would continue through the life of the pipeline. A buried pipeline generates no sound that is audible above ground, however noise would be generated from the pumps and pump motors located at the Cajon Terminal (M.P. O), at the Adelanto Pump Station (M.P. 44.5) and check valves at the pressure reduction station (M.P. 73). Pumps would be located at ground level and would not be enclosed. Both facilities (Cajon Terminal and Adelanto Pump Station) would utilize three 1,500 hp electric pumps (two at normal operation and one at standby). The noise level at each pump is estimated to be 91 dBA at 3 feet and 58 to 60 dBA at 200 feet from the site.[1]

Construction Noise

The pipeline would be installed by four construction spreads (one mainline and three street/urban spreads). The spreads would be located many miles apart and so a given receptor would only be exposed to the noise emitted by an individual spread. Equipment used by a spread would include bulldozers, excavators, graders, generators, welding machines, hoists and trucks (Table 5.5.1-1). Based on conservative attenuation factors, receptors located within about 1,400 feet of construction would experience noise greater than 60 dBA. Some minor blasting may be needed at some locations to break up boulders or rock segments. Receptors would be exposed to noise from a construction spread for a limited number of days: one week in urban areas and two to three days in rural areas.

Pump station and storage area construction would employ a narrow range of construction equipment and lower levels of noise emission. Noise levels from this source would be expected to average 58 DBA at 1,000 feet during the peak construction activity. Construction of the Adelanto Pump Station and the Cajon Terminal storage area would take approximately three and five months respectively.

IMPACTS AND MITIGATION MEASURES

Impact

5.5.1-1 **Community noise levels would be permanently increased in the vicinity of the two pump stations.**

The pump station at Cajon Terminal is located in an unpopulated area many miles from human habitation and approximately 1,500 feet from the All-American Pipeline pump heaters. Noise levels at the existing heater station are high due to facility operation. Pump noise would be expected to be no more than 58 to 60 dBA at 200 feet. Although low, similar to that of a single automobile, pump noise would be audible at some considerable distance due to low ambient noise levels in the vicinity. No residences or other sensitive receptors would be affected.

The Adelanto Pump Station would be located in a lightly developed industrial area, more than one mile from the nearest residence. San Bernardino County sets noise standards for industrial areas at 70 dBA for all time periods (Performance Standards, Section 87.0905).[2] Pump noise would be compatible with noise levels of an industrial area, and would be expected to be no more than 58 to 60 dBA at 200 feet.

Noise level increases due to pump station operations would result in *less-than-significant impacts* to community noise levels.

TABLE 5.5.1-1
TYPICAL CONSTRUCTION EQUIPMENT NOISE (DBA)[1]

	Noise Level at 50 feet	
Equipment Type	Without Noise Control	With Feasible Noise Control[2]
EARTHMOVING		
Front Loaders	79	75
Backhoes	85	75
Dozers	80	75
Tractors	80	75
Scrapers	88	80
Graders	85	75
Trucks	91	75
Pavers	89	80
MATERIALS HANDLING		
Concrete Mixers	85	75
Concrete Pumps	82	75
Cranes	83	75
Derricks	88	75
STATIONARY		
Pumps	76	75
Generators	78	75
Compressors	81	75
IMPACT		
Jack Hammers	88	75
Rock Drills	98	80
Pneumatic Tools	86	80
OTHER		
Saws	78	75
Vibrators	76	75

---

[1] Taken from Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, prepared by Bolt, Beranek, and Newman for the U.S. Environmental Protection Agency, December 31, 1971. Equipment has been selected as an example only and is not representative of the complete construction spreads used.

[2] Estimated levels obtainable by selecting quieter procedures or machines and implementing noise control features requiring no major redesign or extreme cost.

Mitigation Measure

5.5.1-1 *None required.*

Impact

5.5.1-2 **Community noise levels would be temporarily increased as a result of pipeline construction.**

Pipeline construction by spreads creates, in effect, a moving assembly line. Noise would be generated from vehicles and construction equipment affecting only a given area for a few days and ending with completion of construction. Noise levels would be increased at the spread location for approximately one week in urban construction segments and two to three days in rural areas as a result of pipeline construction. Estimated increases in noise levels at sensitive receptors along the pipeline alignment are shown in Table 4.5.1-5. Because the increase in noise levels is temporary and of brief duration, noise guidelines for Los Angeles and San Bernardino counties would not be violated and noise impacts would be *less-than-significant.*

Mitigation Measures

5.5.1-2(a) *The expected duration of construction at any one location shall be no more than 5 days with the exception of the terminals and pump stations. Construction activities shall be limited to between the hours of 6:00 a.m. and 5:00 p.m. weekdays, and between 8:00 a.m. and 6:00 p.m. Saturday and Sunday, except where city staffs have requested otherwise to alleviate traffic impacts or where local noise ordinances limit the hours of allowable construction activities. Nighttime construction shall be performed in commercial areas where requested by agency personnel.*

5.5.1-2(b) *Public notification signs shall be erected along the right-of-way within urban areas prior to commencement of construction.*

5.5.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative would result in similar impacts to community noise levels as described in Section 5.5.1 (Impact 5.5.1-2).

5.5.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative traverses a portion of the Glen Helen Regional Park. Construction noise has the potential to impact recreational activities at this location. The increase in noise levels is brief and would be as described in Section 5.5.1 (Impact 5.5.1-2).

5.5.4 ETIWANDA TERMINAL ALTERNATIVE

The Etiwanda Terminal Alternative would result in similar impacts to community noise levels as the proposed project for the first 83.7 miles. Overall noise impacts would be reduced as impacts during construction would not affect sensitive receptors located in the remaining mileage of the Cajon pipeline route, including 17 schools, one recreational area, one sanitarium and one hospital. Noise impacts would be the same in operation as those discussed in Section 5.5.1 (Impact 5.5.1-1).

5.5.5 M-70 PIPELINE

Even under full compliance with noise regulations, construction noise increases would still be a potentially significant impact. Feasible mitigation measures would lessen the impacts, but would not completely reduce them to a level of "not significant." However, noise from operation of the proposed pipeline system itself would be virtually unnoticeable. Noise associated with routine inspection and maintenance would primarily relate to ground patrol activities. These activities would generally not be noticeable. Therefore, overall operation of the pipeline is expected to result in essentially no impact to sensitive receptors.

5.5.6 PACIFIC PIPELINE

The Pacific Pipeline would generate a certain amount of sound during construction and operation phases. Construction sound would come mainly from vehicles and equipment. It would be inherently transient and temporary in nature, affecting a particular area for only a few days and terminating at the completion of construction. Construction would result in short-term significant impacts to 37 miles of residential land use.

Pipeline operating sound would be much more limited in geographic scope, but would continue throughout the active life of the pipeline. For most of its length, a buried pipeline such as that of the Pacific Pipeline generates no sound that is audible above ground. The pump stations and pressure-reducing stations would be the major long-term sources of sound associated with the pipeline. However, these stations have been located away from sensitive receptors.

5.5.7 FOUR CORNERS PIPELINE

The Four Corners Line 90 Pipeline would require construction of four new pump stations and three new heater stations. Community noise levels would be increased in the vicinity of the new pump stations, located near Sheep Hole Pass, Twenty-nine Palms, Morongo Valley and Moreno Valley. The exact locations of these pump stations are not known. Sensitive receptors may potentially be affected.

5.5.8 NO PROJECT

The No Project alternative would result in increased tankering and alternative modes of crude oil transportation through the Los Angeles Basin. Harbor, rail and truck activities would increase at Long Beach Harbor and hence long term significant noise impacts on sensitive receptors in the Long Beach area would be anticipated.

ENDNOTES

1. Cajon Pipeline Company, personal communication, January 9, 1992.
2. San Bernardino County Environmental Management Group, Performance Standards, Section 87.0905.

5.6 VISUAL RESOURCES

5.6.1 CAJON PIPELINE

The Cajon Terminal site would include a pump station, a 40 by 10 feet control building, and a storage area on approximately 25 acres. The storage area would be occupied by 5 storage tanks that are 48 feet high and 153 feet in diameter. Each tank will be surrounded by a 6 feet high earthen dike for containment. The Cajon Terminal and storage area would be surrounded by a chain link fence. The Adelanto pump station would be located on a 2.2 acre site which would house a 30 feet by 10 feet control building and a 50 feet by 100 feet warehouse with a maximum height of approximately 30 feet. The remainder of the site would be occupied by a parking area, a substation, and various components of sump and pump systems.

Standards of Significance

In accordance with the CEQA Guidelines, BLM's Multiple-Use Classifications and Contrast Rating System, and the USFS Visual Resource Management System, a project will have a significant effect on visual resources if it would:

- Substantially change existing visual quality and resources of desert lands;
- Result in alteration of visual resources of USFS lands to a degree that would attract attention;
- Substantially change or obstruct views from important public gathering places, scenic highways or primary travel routes;
- Substantially degrade existing visual quality and visual resources of the region.

Evaluation of the significance of project-specific impacts in relation to this criteria is provided in the following discussion.

IMPACTS AND MITIGATION MEASURES

Impact

5.6.1-1 **Development of Cajon Terminal would alter existing visual resources and change existing views from State Route 58.**

Construction at the Cajon Terminal would result in the development of 25 acres of partially disturbed desert land. Dominant structures would include five containment tanks and a control center building. The 153-feet diameter containment tanks, surrounded by six feet earthen dikes, would have a maximum height of 48-feet. A chain link perimeter fence, a substation, and parking area would also be constructed. The tanks and all above-ground development associated with the facility would be highly visible, effecting foreground views from State Route 58 (SR 58) and contrasting strongly with the surrounding desert landscape. While the terminal would be located adjacent to the All-American Pipeline's 12-Gauge Lake Heater Station, the area of development would increase substantially, with the height of the containment tanks adding to the visual prominence of the terminal and to the duration of views along the Highway. Due to the visual sensitivity of the site relative to SR 58, the strong visual contrast with the surrounding desert environment, and the Multiple-Use Classification M priority for conserving desert resources, construction of the Cajon Terminal would be considered a *significant impact* and would require mitigation.

Mitigation Measures

5.6.1-1(a) *To ensure that storage tanks and all other above ground facilities contrast as little as possible with the surrounding desert environment, the project proponent shall submit to the BLM for approval, a materials board that displays a sample of the surface soil alongside the specific paint type to be used for each facility. Material boards shall be submitted for each facility located in the desert.*

5.6.1-1(b) *Earthen levies surrounding the containment tanks shall be designed to look natural (i.e. mounded forms), rather than manufactured (flat surfaces).*

5.6.1-1(c) *The minimum height to diameter ratios feasible for storage tanks shall be considered in order to reduce tank heights as seen along the highway by lowering the tanks and/or increasing the height of the earthen levies.*

Implementation of these mitigation measures would reduce this impact to a *less-than-significant* level.

Impact

5.6.1-2 **Construction of the pipeline route through the high desert would require grading and the use of heavy equipment within a 70-feet right-of-way.**

Construction of the pipeline from Cajon Terminal to the northern edge of Cajon Pass would be visible from a few residential and industrial areas in and around the City of Adelanto, and along sections of U.S.

Route 395 (U.S. 395). Short-term construction impacts to these viewsheds are not considered significant. In a limited number of areas where existing dirt roads and streets can not be used or are not of a sufficient width, desert vegetation including Joshua trees would be cleared. Due to the slow recovery time for desert vegetation this alteration of the landscape would remain visible for a number of years. Areas where vegetation would be lost are remote and would not be evident from the viewshed of any scenic highway, primary travel route, or public gathering place. Clearing and grading of the 70-feet right-of-way would be considered a *significant impact.*

Mitigation Measures

5.6.1-2 (a) *Areas disturbed by pipeline construction shall, to the maximum extent feasible, be regraded, imprinted and revegetated to restore their original appearance in accordance with the Erosion and Sedimentation Control Element of the COM Plan and to the satisfaction of the Erosion and Sediment control Review Committee.*

5.6.1-2 (b) *The pipeline route shall avoid the removal of Joshua trees through the minimization of disturbance within the ROW in areas of Joshua tree woodland. Joshua trees less than seven feet in height that would be removed by grading shall be relocated outside of the ROW. Plant relocations shall be identified by tagging of specimens prior to grading of the ROW.*

5.6.1-2 (c) *All construction activities, including vehicle movement and storage of materials, shall be confined within the pipeline right-of-way. Care shall be taken during construction to avoid damage to vegetation and habitats not directly involved in project construction.*

Implementation of these mitigation measures would reduce this impact to a *less-than-significant* level.

Impact

5.6.1-3 **Construction of the Adelanto Pump Station would result in the conversion of 2.2 acres of vacant land to a built use.**

The Adelanto Pump Station site would be located in an industrial area of Adelanto. Pump station structures and facilities would be consistent in scale and character with other adjacent industrial uses. The absence of large containment tanks at the Adelanto site would make it much less visually intrusive than the Cajon Terminal. While this impact is considered a *less-than-significant impact*, the following mitigation measure is recommended to provide a beneficial impact to the area.

Mitigation Measure

5.6.1-3 *The site perimeter and parking lot should be attractively landscaped to screen the facility and enhance the visual quality of the surrounding area, subject to review and approval by the City of Adelanto.*

Implementation of these mitigation measures would provide a *beneficial impact.*

Impact

5.6.1-4 **Construction of the pipeline route through the Kramer Hills and the Cajon Pass would result in some landform alteration and the clearing of a right-of-way on visually prominent mountain slopes.**

Construction of the pipeline on the northern and southern slopes in the Kramer Hills and the southern slopes of Baldy Mesa in the Cajon Pass would require trenching and the use of heavy equipment within a 70-feet right-of-way. The affected slopes are highly visible. Slopes within the Kramer Hills can be seen from middleground vantage points along U.S. Route 395 (U.S. 395). The slopes below Baldy Mesa can be seen from middleground vantage points along Interstate 15 (I-15) which is a primary travel route. Ground-disturbing construction activities could alter natural contours and disturb native vegetation in this area. It is proposed to directional bore the CalNev slope, which would involve setting heavy machinery at the toe of the slope. The slope face would not be disturbed. However, due to the high visual character rating of the area, and a variety classification of A, any disturbance noticeable from middleground vantage points along I-15 would be considered a *significant impact.*

Mitigation Measure

5.6.1-4 (a) *Construction activities and landform alterations on all mountain slopes shall be restricted to the existing Baldy Mesa Road from M.P. 55 to M.P. 63. Construction between M.P. 59 to M.P. 60 shall be restricted to a graded swath of 50 feet of the existing cleared right-of-way of the CalNev gas pipeline.*

5.6.1-4 (b) *Construction activities and landform alterations on all mountain slopes shall be restricted to existing transmission access roads and existing rural roads from M.P. 20 to M.P. 25 within the Kramer Hills. Construction from M.P. 22 to M.P. 23 shall be restricted to a graded swath of 50 feet on undisturbed slopes.*

5.6.1-4(c) *Implementation of Mitigation Measure 5.2.1-1(c). The revegetation plan shall be designed to recreate original contours to the degree feasible.*

5.6.1-4(d) *There shall be no pipeline facilities above ground within the Forest Service boundary except for sign markers and cathodic protection devices. Signing colors and size are dictated by Federal Regulation. Cathodic protection devices shall be painted to blend in to and harmonize with the background colors of BLM and Forest lands, using a color approved by the BLM or Forest Service.*

Implementation of these mitigation measures would reduce this impact to a *less-than-significant* level.

Impact

5.6.1-5 **Construction of the pipeline route from M.P. 67 to the City of Carson could result in a loss of trees and vegetation alongside highways and other roadways.**

For the majority of the route, the pipeline is located within the shoulder or right-of-way of a road. However, at some locations parallel to the I-15 (M.P. 73 - M.P. 83.5) Mission Boulevard (M.P. 88.7 - 92.0) roadside vegetation could be potentially removed due to construction.

Mitigation Measure

5.6.1-5 *In urban areas, prior to removal of any trees along the pipeline route, a tree removal and planting plan shall be submitted to the local jurisdiction for approval. Where mature trees (6-inch in diameter and larger) are removed they shall be replaced on a one-to-one basis with similar species to the satisfaction of the landowner.*

Implementation of these mitigation measures would reduce this impact to a *less-than-significant* level.

Impact

5.6.1-6 **An accidental oil spill would result in a conspicuous mark upon open ground in sensitive visual or urban areas.**

An oil spill, if occurring at a pipeline location above ground, would result in staining of vegetation, soil and pavements. In rural areas, removal of the contaminated area would result in grading and loss of vegetation which could be potentially significant if occurring in the Cajon Pass or Whittier Narrows areas. This is a *potentially significant impact.*

Mitigation Measure

5.6.1-6(a) *An Oil Spill Contingency Plan shall be which would include procedures for revegetation of spill zones within rural areas. This plan shall be reviewed by the Emergency Response Review Committee. The committee shall provide recommendations to the Lead Agencies for implementation of the plan. This plan shall be finalized and approved by the Lead Agencies (BLM, USFS and City of Adelanto).*

5.6.1-6 (b) *Implementation of Mitigation Measures in Section 5.12 to contain and reduce spills.*

Implementation of these mitigation measures would reduce this impact to a *less-than-significant* level.

5.6.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative crosses 13 miles of undeveloped desert distant from U.S. 395 and SR-58. Impacts due to construction would be similar to Impact 5.6.1-2 in Section 5.6.1. It would not result in any disruption to prominent slopes in the Kramer Hills.

5.6.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative would leave the proposed route at M.P. 73 and rejoin the pipeline route at M.P. 74, east of Lytle Creek. It would result in similar construction disruptions and grading but would not result in disruption to any prominent slopes on the north side of I-15.

5.6.4 M-70 PIPELINE

The effects of short-term construction due to ground-disturbing activities and the presence of workers, heavy equipment and barricades, would have a significant impact on the scenic quality of the project area. Long-term impacts would result from the clearing of vegetation and other obstacles along the M-70 Pipeline route. These long-term impacts would be reduced to less-than-significant levels over a period of 3 to 5 years. This would be accomplished through implementation of a revegetation program and by requiring pipeline inspections by foot or air or through the use of existing roads.

5.6.5 PACIFIC PIPELINE

Significant impacts on visual resources would occur due to short-term construction activities and removal of vegetation along the Southern Pacific right-of-way. All identified short and long-term impacts would be reduced to less-than-significant levels with implementation of an Erosion Control, Revegetation and Landscape Plan whereby vegetation removal during construction would be replaced in kind or reseeded with shallow-rooted indigenous species in the area. This would reduce soil erosion and sedimentation, restore riparian communities and important trees (Oaks), and restore wildlife habitats.

5.6.6 FOUR CORNERS PIPELINE

Use of the existing Four Corners Line 90 Pipeline would require construction of three new heater stations and four new pump stations. This would result in the development of approximately 5 acres of partially disturbed desert land for each heater station and pump station near Sheephole Pass, Twenty-nine Palms, Morongo Valley and Moreno Valley. Mitigation measures could be implemented to reduce the visual contrast with surrounding open spaces and reduce the impact to a less-than-significant level.

5.6.7 NO PROJECT

The No Project alternative would not require any construction or improvements to existing facilities. This alternative would not have any impacts on visual resources.

5.7 LAND USE

5.7.1 CAJON PIPELINE

Standards of Significance

The following significance criteria were developed for potential land use and construction impacts. These impacts would be considered significant if the proposed project would:

- Result in land uses incompatible with the surrounding uses;
- Conflict with land use policies of the U.S. Bureau of Land Management and the U.S. Forest Service;
- Conflict with local zoning or other land use plans and policies; and
- Disrupt the recreational, educational, religious and scientific use of the area.

Compliance with the California Desert Conservation Plan is discussed in Section 5.8, Utilities. Evaluation of the significance of other project specific impacts in relation to this criteria is provided in the following section.

IMPACTS AND MITIGATION MEASURES

Impact

5.7.1-1 **Development of the proposed pumping stations (Cajon Terminal and the Adelanto pump station) would occupy a total of 27.2 acres of vacant land.**

Two pumping stations for the proposed pipeline will be installed, one at the juncture of the proposed pipeline and the All-American Pipeline 12-Gauge Lake Heater Station, and one in the City of Adelanto. The Cajon Terminal would occupy 25 acres and the Adelanto station approximately 2.2 acres. The existing land would be leveled, fenced and occupied by prefabricated structures. These stations would not be adjacent to any sensitive uses, and would not lead to any alteration in basic land use patterns in the area. However, the Cajon Terminal would be situated on BLM land and therefore require a use permit from BLM. The Adelanto Pump Station would require an encroachment permit and a conditional use permit from the City of Adelanto. This is considered a *less-than-significant impact.*

Mitigation Measure

5.7.1-1 *None required.*

Impact

5.7.1-2 Construction of the proposed pipeline would result in a temporary disruption of the surrounding area.

Areas to be utilized for the pipeline would be excavated, the pipeline installed, and the land restored. In addition, areas adjacent to the pipeline would temporarily be used for construction storage, access, and general construction activities. This would not affect any sensitive uses and is temporary in nature. Therefore, this impact is considered to be *less-than-significant.*

Mitigation Measure

5.7.1-2 *None required*

Impact

5.7.1-3 Construction of the proposed pipeline in the Cajon Pass would result in a temporary disruption of the surrounding area.

Areas to be utilized for the pipeline would be excavated, the pipeline installed, and the land restored. Recreational use of these areas is low within the National Forest. This impact is considered to be *less-than-significant.*

In the long-term, this proposed pipeline project is consistent with goals of the U.S. Forest Service. According to the San Bernardino National Forest Land and Resources Management Plan (1988),[1] "major utilities would continue to be brought into Southern California through the Cajon Pass utility corridor." Although the Plan prefers the "upgrading and enlarging of existing facilities to new construction in the utility corridor, any new facilities should be located adjacent to existing utilities whenever possible and an additional corridor only if the need arises."

Mitigation Measure

5.7.1-3 *None require.*

Impact

5.7.1-4 Construction of the proposed pipeline in developed areas would result in a temporary disruption of the surrounding area.

Areas to be utilized for the pipeline would be excavated, the pipeline installed, and the land restored. In addition, areas adjacent to the pipeline would temporarily be used for construction storage, access, and general construction activities. This could disrupt adjacent residences and non-residential sensitive receptors, which include schools, churches, hospitals (i.e. Lanterman State Hospital and Developmental Center.) and recreational areas (i.e., Whittier Narrows Recreational Area). Although temporary in nature, this impact is *potentially significant.*

Mitigation Measure

5.7.1-4 (a) *Construction activities shall be confined to the hours between 6:00 a.m. and 5:00 p.m. weekdays, and 8:00 a.m. to 6:00 p.m. Saturdays and Sundays within 300 feet of any residence or hospital structure housing patients. Construction staging areas shall be located in industrial, commercial, or undeveloped areas. Construction vehicles shall avoid utilizing residential streets to the extent feasible.*

5.7.1-4 (*b*) *Refer to Mitigation Measures of Section 5.10, Transportation and Circulation.*

5.7.1-4 (c) *Construction in any single location shall be constrained to between two to five days, except at the Adelanto Pump Station and Cajon Terminal where construction duration shall be overseen by the City of Adelanto.*

5.7.1-4 (d) *When pipeline facilities are removed at the end of the pipeline's life, the ground surface shall be restored to its previous condition, including revegetation. In natural areas, native species appropriate to individual locations shall be utilized for revegetation.*

Implementation of this mitigation measure would reduce this impact to *less-than-significant.*

Impact

5.7.1-5 An oil spill in urban and rural areas could result in contamination of private property and restriction of land use.

An oil spill in urban areas would typically be confined to surface streets and storm drains. However, oil could flow onto private property and could result in potentially significant impacts. Oil spills in rural areas and within recreational areas, such as Cajon Pass and Whittier Narrows, could potentially degrade and limit the use of the open space and discontinue or limit the use of recreational areas. These impacts to land use would be limited in time to the time immediately following the spill and time required for clean-up. It is anticipated that recreational areas would not be affected for more than one season of use.

Other sensitive receptors (schools, parks, churches, libraries, etc.) would be affected if the spill was to occur within 100 feet of their location. These impacts would continue from the emergency response through to the clean-up. Interruption to their activities would likely occur over a period of two to three weeks. Due to the temporary nature of the disruption, these impacts are considered *significant over a short time period.*

Mitigation Measure

5.7.1-5(a) *An Oil Spill Contingency Plan shall be developed which would include containment measures to limit the extent of the spill and an emergency plan for traffic control in urban areas. This plan shall be reviewed by the Emergency Response Review Committee. The committee shall* *provide recommendations to the Lead Agencies for implementation of the plan. This plan shall be finalized and approved by the Lead Agencies (BLM, USFS and City of Adelanto).*

5.7.1-5 (b) *Implementation of Mitigation Measures in Section 5.12 to contain and reduce spills.*

Implementation of this mitigation measure would reduce the impact to *a less-than-significant level.*

5.7.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative would result in similar impacts to land use, and disruption as described in Section 5.7.1.

5.7.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative would result in similar impacts to land use as described in Section 5.7.1. Additionally, temporary disruption to recreational uses could occur due to construction adjacent to the Glen Helen Regional Park. This impact would be temporary in nature and not significant.

5.7.4 M-70 PIPELINE

Construction

Construction impacts within urban areas would predominantly affect residential, industrial and office park/business land uses. Closure of streets or traffic lanes would reduce access to, and/or inhibit parking within areas under construction. These traffic constraints would affect local land uses by increasing time delays due to traffic congestion, and temporarily disrupting normal neighborhood routines, business hours and business activities. Although the duration of construction at any single location would be short, these impacts could be significant.

Construction impacts affecting rural land uses include: limited access and parking within recreational areas, traffic congestion and time delays along roads subject to construction, possible delays in production within agricultural areas, and temporary disruption of land uses along those portions of the route where the pipeline would not be placed under existing roadways. As construction activities at any given site are not expected to exceed three weeks, these impacts would be adverse but not significant.

Non-residential sensitive receptors located on, or within 1,000 feet of the proposed route including schools, churches, hospitals, parks, and recreation areas would be temporarily affected by construction activities. Impacts would include restricted vehicular access and/or parking, possible disruption of routine activities and schedules due to street and/or traffic lane closure, and increased local noise levels due to construction activities and equipment. Since construction near a sensitive receptor would not exceed three weeks, these impacts would be adverse but not significant.

The proposed pipeline route traverses approximately 45.2 miles of land designated recreational or open land. Within urban areas, generally located along the southern half of the route, there are two large recreational areas, as well as a number of golf courses and neighborhood parks. Along the northern portion of the proposed route there are a number of large recreational areas within or adjacent to National Forest System lands. Construction impacts affecting recreational areas include short detours, restricted access and parking, and time delays due to street and/or traffic lane closures, temporary disruption of recreational activities adjacent to the route, and temporary increases in local noise levels due to construction activities and equipment. As the anticipated duration of construction at any given location is not expected to exceed three weeks, these impacts would be adverse but not significant.

Operation

Because the proposed design of the project places the majority of the pipeline below the ground surface, operation phase impacts to land use would be chiefly related to the pipeline's consistency with local land use plans, policies and regulations.

The proposed pipeline traverses eleven jurisdictions including Kern County, Los Angeles County, U.S. Forest Service, California Department of Parks and Recreation, Santa Clarita, the City of Los Angeles, Culver City, the Los Angeles County Flood Control District, and the cities of Inglewood, Hawthorne, and Torrance. Operation of the proposed pipeline is consistent with existing plans and policies within these jurisdictions. There would be no significant impact to local regulations or existing land uses.

Lands crossed by the proposed pipeline that are under the jurisdiction of the U.S. Forest Service include the Angeles and Los Padres National Forests. According to the Los Padres National Forest Land and Resource Management Plan, projects such as the proposed pipeline are anticipated to occur within the Forest and are not expected to "substantially affect future land management activities". The proposed pipeline would follow existing pipelines/rights-of-way through these forests and thus would not conflict with Forest Service land and resource management plans and policies. No significant impact to U.S. Forest land management regulations would occur.

The M-70 Pipeline, and all oil pipelines through National Forest System lands, are authorized pursuant to the Mineral Leasing Act of 1920 and must be constructed, operated and maintained as a common carrier.

5.7.5 PACIFIC PIPELINE

Construction

Temporary construction activities within rural areas could potentially affect open space, recreational, and agricultural land uses. Within the rural areas of the project, construction spreads are anticipated to stay inside the SPRR ROW, varying from 15 to 50 feet on one side of the track. A maximum construction time of two to five days is predicted at any single location. Site restoration, revegetation, and landscaping in rural ares would take place immediately before or during the next planting season following the backfill phase of construction to minimize impacts on visual resources, soils, and watersheds.

In urban areas, construction activities could potentially affect residential, recreational, church, school, and commercial land uses. Potential effects on water, plant and animal life, noise, visual resources, transportation and traffic, and public services are addressed in their respective sections.

Sensitive recreational receptors located within 1,000 feet of the project including residences, schools, churches, and hospitals, would be temporarily affected by construction activities. Impacts would include restricted vehicular access, restricted or removed parking, possible disruption of routine activities, noise, visual, and street/traffic lane closures. Construction would be limited to certain times of day to control noise for sensitive receptors. Since construction near a sensitive receptor would not exceed two to five days, these impacts would be adverse, but not significant.

Operation

The only above-ground facilities on the Pacific Pipeline are at the Gaviota Marine Terminal (existing), the Keith Pump Station near Fillmore (new), and the refineries at Wilmington and El Segundo (existing.) Because virtually all other facilities would be underground, there would be very little effect on land use patterns or recreation during operation.

The project would have no significant adverse impacts upon existing land uses, or land use plans, policies, or regulations along the project route because of its location in the Southern Pacific Railroad ROW and street/highway ROWs. Mitigations proposed would reduce potentially significant impacts on land use and recreation. Other land use mitigation measures include implementation of an Erosion Control, Revegetation and Landscape Plan and the restriction of pipeline activity in recreation areas along the coast to avoid the peak tourist season.

5.7.6 FOUR CORNERS PIPELINE

The use of the Four Corners Line 90 Pipeline would require construction of three new heater stations and four new pump stations. Construction impacts to land use and sensitive receptors would be limited to the immediate area of construction and would occur for a limited time. These impacts are considered adverse but not significant.

5.7.7 NO PROJECT

The No Project alternative would result in increased use of harbor facilities at Long Beach. The increased use would be consistent with existing industrial uses and would not require any construction or improvements in other areas. No significant impacts to land uses would occur.

ENDNOTES

1. U.S. Department of Agriculture, Forest Service, San Bernardino Nation Forest Land Resources Management Plan, 1988.

5.8 UTILITIES

5.8.1 CAJON PIPELINE

Impacts to existing utilities would occur during construction of the Cajon Pipeline if the contractor does not excavate carefully in the vicinity of the underground utility lines. The hazards associated with a number of utilities occupying the same corridor could also be increased by the Cajon Pipeline.

Standards of Significance

Utility impacts are considered significant if the proposed project would:

- Permanently displace, alter or disrupt the existing road and rail network, and public and private utility lines and services;
- Conflict with Utility Corridor policies of the Bureau of Land Management (BLM) and the U.S.Forest Service (USFS); or,
- Preclude emergency access to utility lines along the pipeline corridor during and after pipeline construction.

Evaluation of the significance of project specific impacts in relation to this criteria is provided in the following discussion.

IMPACTS AND MITIGATION MEASURES

Impact

5.8.1-1 **Pipeline excavation could accidentally damage and/or disrupt service of existing utility lines.**

Major utility lines such as petroleum, natural gas, electrical, communications, sewer and water lines run parallel or cross the proposed pipeline route. Clearing, grading and ditching during construction could accidentally damage one or more existing utility lines. This is considered a *potentially significant impact.*

Mitigation Measure

5.8.1-1 (a) *California state legislation requires that at least two days prior to excavation of any subsurface installations, the excavator, in this case the Cajon Pipeline Company, is required to contact a regional notification center. The regional notification center, known as*

Underground Service Alert for the Southern California area, will notify affected members of impending excavation at or near their underground installations. The notified members are required to mark the specific location of their facilities within the work area prior to the start of excavation. Legislation requires the excavator to expose the underground facilities by hand before using power equipment. Failure to follow this procedure could result in a fine of up to $50,000 and charges for the repair of any damages to the underground facilities.

5.8.1-1 (b) *The alignment of the pipeline will be designed to minimize or avoid interference with plans, policies, and existing and planned infrastructure during its construction. All affected agencies will be consulted regarding the precise alignment of the pipeline within their respective jurisdictions in order to minimize or avoid interference with existing and planned infrastructure and public facilities.*

5.8.1-1(c) *A list of contact names and telephone numbers for each agency and utility company whose lines will be crossed will be kept with the construction supervisor for that street crew. Representatives of utility agencies and companies shall be requested to be onsite on the day that utilities under their jurisdiction or ownership are being crossed*

5.8.1-1(d) *In the event a utility is interrupted, the agency or company whose service has been disrupted shall be contacted immediately. All construction work shall cease until service has been resumed.*

Implementation of this mitigation measures would reduce the impact to a *less-than-significant* level.

Impact

5.8.1-2 **Development of the proposed pipeline within utility corridors could result in collocation dangers, as a result of a catastrophic event.**

The current concentration of about 30 major utilities lines in the Cajon Pass utility corridor increases the risk and potential severity of utility failures. The San Andreas fault, which lies within the corridor, is subject to great earthquakes with magnitudes of 8 or greater in the next 30 years. Failure of one utility caused by an earthquake or other catastrophe could result in progressive failure of other utilities, and the closure of highways and railroads. Collocation in Cajon Pass increases the likelihood that several of Southern California's major utility lifelines may be cut at once. This is a *significant* impact.

The question to be examined in this case is to what extent does addition of the Cajon Pipeline to the utilities corridor increase the hazard of severe utility failure. If a large earthquake occurs on the San Andreas fault prior to construction of the Cajon Pipeline there is already a considerable risk of utility and transportation system failure. An earthquake could damage highway and railroad structures, cause landslides that block highways and railroads and sever natural gas, petroleum and communications lines.

Overhead electrical power lines would also be vulnerable to damage but to a lesser extent than the underground lines. If spilt petroleum or natural gas ignited, then rapid restoration of service through the utility corridor would be problematic. Temporary elimination of service through Cajon Pass would have a severe effect on natural gas and electrical power supplies to the Los Angeles basin because these services have little or no storage capacity. However, as with other utilities and transportation system elements, there are alternative routes for electrical power and natural gas to enter the basin.

The addition of the Cajon Pipeline to the existing utilities corridor would not significantly increase the collocation risk. Heavy crude oil is a less hazardous substance than natural gas or petroleum, both of which are already in the corridor. Furthermore the temporary disruption of service through the Cajon Pipeline would not affect gasoline supplies in the Los Angeles basin because crude oil is available to refineries from their storage.

Mitigation Measures

5.8.1-2(a) *The Incident Command system shall set priorities for disaster repair efforts on utility lines and transportation networks. Those utility lines vital to the region must be repaired ahead of other lines.*

5.8.1-2(b) *Development of an Oil Spill Contingency Plan as discussed in Mitigation Measure 5.12.*

Implementation of these mitigation measures would reduce this impact to a less-than-significant level.

Impact

5.8.1-3 **The proposed pipeline would be constructed adjacent to existing utilities in the USFS designated Cajon Pass Utility Corridor.**

The USFS San Bernardino National Forest Land and Resource Management Plan (1988) designates the Cajon Pass as a utility corridor. As such, the Plan recommends upgrading and enlarging exiting facilities rather than constructing new ones within the utility corridors. However, if a new utility facility is to be constructed, it should be located adjacent to existing lines. Therefore, the proposed Cajon Pipeline is in conformance with the Plan. This is considered a *less-than-significant impact.*

Mitigation Measure

5.8.1-3 *Any disputes arising between Cajon Pipeline company and existing users of public lands will be resolved by the Forest Service and/or BLM. Existing users have the right to not be adversely impacted by the pipeline, but their use of existing public land is not exclusive.*

Implementation of this mitigation measure would reduce this impact to *a less-than-significant impact.*

5.8.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative begins at the All-American Pipeline 12-Gauge Lake Heater Station and traverses southwest for 13 miles to U.S. Route 395 (U.S. 395) where it rejoins the proposed route at M.P. 25. This alternative route is outside designated utility corridors of the BLM, California Desert Conservation Area Plan (1980) for the first 13 miles. An amendment to the California Desert Conservation Plan would be required under a conditional use variance. The project proponent would be required to submit a request for amendment to the District Manager of the BLM California Desert District.

5.8.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative would depart from the proposed route at M.P. 73 to cross the I-15 and would parallel an existing utility easement. It would then rejoin the proposed route at M.P. 74. Impacts to utilities would be as described in Impact 5.8.1-1.

5.8.4 M-70 PIPELINE

The M-70 Pipeline would cross numerous utilities between Mobil's Lebec Station and Torrance. Pipeline excavation could accidentally damage and/or disrupt service of existing utility lines. Collocation dangers in Tejon Pass may also be considered significant.

5.8.5 PACIFIC PIPELINE

The Pacific Pipeline would cross numerous utilities between Gaviota and the Los Angeles area. Pipeline excavation could accidentally damage and/or disrupt service of existing utility lines.

5.8.6 FOUR CORNERS PIPELINE

Use of the Four Corners Line 90 Pipeline would require construction of three new heater stations and four new pump stations. Construction at these specific construction sites would require identification of utilities in the area, and would be a less-than-significant impact.

5.8.7 NO PROJECT

Under the No Project alternative, construction-related impacts would not occur. It is anticipated that increased oil importation would occur by way of marine tanker. No impacts to utilities are anticipated to occur.

5.9 SOCIOECONOMICS

5.9.1 CAJON PIPELINE

The socioeconomic analysis describes the potential impact of the Cajon Pipeline project on employment, population levels, housing, public services, utilities, and public revenues. Employment growth itself is a beneficial impact in that it directly stimulates and strengthens the local economy due to the direct increase in spending associated with the new enterprise and the new employees. The direct increase in spending further stimulates the local economy indirectly through the multiple rounds of subsequent spending by existing enterprises and employees as production is increased to meet the new demand for goods and services.

The main socioeconomic effects of an industrial project that only increases employment are:

1. stimulus and strengthening of the local, and possibly the regional, economy;
2. direct increase in the demand for local housing due to desire of some non-local residents, who would become employed, to live locally;
3. an indirect increase in local population and local housing supply if the increase in demand for local housing is met by an increase in the housing stock;
4. an indirect increase in the demand and cost for public services and utilities due to the indirect increase in local population if additional housing stock is forthcoming in response to the increased demand;
5. an increase in the price level of local housing if the induced increase in supply is not equal to the increase in demand;
6. a direct temporary increase in public service and housing demand from construction employment;
7. a direct increase in public property tax revenues due to increased improvement value of the project's property;
8. a direct increase in local sales tax revenue due to the increased spending as well as an increase in other miscellaneous public revenue, such as business license taxes, associated with the new economic activity and its employees;
9. a change in the local jobs/housing balance; and,
10. a potential disruption to the economic or social fabric of the local community. This potential is due more to the physical characteristics of the project than to employment itself.

Due to the low employment generation potential of the Cajon Pipeline project and to the temporary nature of most of it, minimal employment-related impacts are anticipated. As a result, a general analytic approach is used. This general approach will:

1. identify the general, beneficial economic impact as a percentage increase over current employment and as a percentage share of projected employment;
2. assess the indirect permanent employment effects on population, housing, and public services by assuming a worst-case scenario that each new employee presently resides non-locally and would prefer a local residence;
3. assess the direct construction employment effects on population, housing, and public services by assuming a worst-case scenario that 75 percent of new construction jobs would be filled by non-local workers;
4. assess the project's direct, positive public revenue impact in terms of the increase in property tax directly resulting from the project's property improvements; and,
5. assess the potential economic or social disruption to the communities resulting from the physical components of the project.

Standards of Significance

Although the assessment of significance is not explicitly stipulated by NEPA for socioeconomic effects, nor required by CEQA, the following outlines the criteria which is used for the assessment. The following impacts would be considered significant (substantial adverse changes to existing environmental conditions) if:

- employment/economic impacts would increase the local unemployment rate to 10 percent or more and persist for a year or more;

- direct temporary housing demand would exceed adequate housing accommodations within a commuting distance of 170 miles round trip;

- direct temporary population/public service impacts would increase the size of the temporary population by 1,000 persons or more for a year or more;

- indirect permanent population, housing, and public service impacts were not independent of the proposed project, or the projected need for local housing exceeded the projected increase or planned supply by 5 percent or more for a year or more;

- jobs/housing balance impacts would accentuate current imbalances by 10 percent or more for more than a two year period (increase in job richness or housing richness of a local area);

- public revenues would decrease by 10 percent or more for a year or more;

- economic or social disruption would occur due to: the relocation of businesses or residents; removed or impaired access to public/community institutions; or, a project feature that physically divided a community, reduced access between the areas or increased the perception of community fragmentation and disintegration.

IMPACTS AND MITIGATION MEASURES

SAN BERNARDINO STUDY AREA

Impact

5.9.1-1 **The local economy of San Bernardino County would be stimulated by a temporary increase in employment as the project would create 145 construction jobs lasting 60 to 70 days and 42 jobs lasting six to eight months. This would be a 1 percent increase in 1992 construction employment and a 6 percent share of projected growth in construction employment.**

Construction Employment.[1] Pipeline construction is expected to begin in June 1993 and last for a 60 to 70 day period. Pipeline construction employment is estimated at 145 workers. The project would use four construction crews: one "mainline spread" and three "street crews."

Additionally, construction of the Adelanto facilities will require 10 to 12 workers for a period of six months, while construction of the Cajon Terminal would require about 25 to 30 workers over a seven to eight month period.

Tables 5.9.1-1 and 5.9.1-2 summarize the project's employment profile. Table 5.9.1-3 summarizes the project's employment/economic impact. The temporary increase in construction employment would be a small but *beneficial impact* on the local economy.

Mitigation Measures

5.9.1-1 *None required.*

Impact

5.9.1-2 **The project would temporarily increase demand for housing in the region for the 140 construction workers for a period of 60 to 70 days, and 9 workers in Adelanto for six months, and 23 workers at the Cajon Terminal for eight months.**

Direct Temporary Housing Impact. Under the worst-case assumption that 75 percent of the construction workers would be non-local hires (see Table 5.9.1-1), the project would temporarily increase demand for temporary housing for the 140 construction workers for a period of 60 to 70 days, nine workers in Adelanto for six months, and 23 workers at the Cajon Terminal for eight months. Given the urbanized nature of the area within a 170 mile round trip of the study area, adequate temporary accommodations would be expected to be available, and this impact would be considered *less-than-significant.*

Mitigation Measure

5.9.1-2 *None required.*

Impact

5.9.1-3 **The project would temporarily increase population in the adjacent cities by less than 1 percent in all cases except for 2 percent in Adelanto.**

Direct, Temporary Population/Public Services Impacts. The percentage increase in the population of adjacent cities is used as a proxy for generally assessing population/public service impacts. The most affected public service would be police. Resources for this, as well as many other public services, are estimated based on population. Usually, the estimate is made on the basis of one staff person (and associated resources) per 1,000 population. As Table 5.9.1-3 illustrates, none of the cities in the study area would experience an increase in temporary population even approaching 1,000. Additionally, the duration of the increase is less than one year: 60 to 70 days within the entire study area for 145 workers and six to eight months for 42 workers. As a result, this impact would not be considered significant. Additionally, public utilities could be affected if increased demand for housing required increasing hook-ups. Temporary increases in population would not increase hook-ups, and therefore, utilities would not be affected. This impact is considered to be *less-than-significant.*

TABLE 5.9.1-1
CONSTRUCTION EMPLOYMENT PROFILE

	Pipeline					
	Mainline Spread	Street Crews			Adelanto	
Characteristic		#1	#2	#3	Management	Operations
Employees	125	20	20	20	12	30
% Local Hire[1]	25%	25%	25%	25%	25%	25%
Location	12 Gauge/MP75	MP75/90	MP90/116	MP116+	Adelanto	12 Gauge
Location/County	San Bernardino	San Bernardino	L.A.	L.A.	San Bernardino	L.A.
Location Length (miles)	75	15	26	26	na	na
Pace	1.5 miles/day	0.25 miles/day	same	same	na	na
Duration	60 days	45 days	70 days	70 days	6 months	8 months
Start Date[2]	6/1/92	7/15/92	8/1/92	8/15/92	8/1/92	8/1/92

Note:

[1] The share of local hires depends upon whether a California or non-California-based firm wins the construction contract. If a California firm wins, the expectation would be for 60%-70% local hires. If a non-California firm wins, the expectation would be for 25%-30% local hires. The analysis uses the worst-case scenario of 25% local hires since the contract would not be awarded for a number of months.

[2] Start dates are approximate

Source: EIP Associates, Cajon Pipeline Company.

TABLE 5.9.1-2
ANTICIPATED PERSONNEL NEEDS

Construction	Number of Positions		Number of Positions
Mainline Spread		**Street Crew**	
Superintendent	1	Sideboom Operator	1
Spread Manager	1	Swamper	1
Foreman	6	Backhoe Operator	1
Operators/Mechanics	46	Oiler	1
Teamsters	22	Truck Drivers	2
Welders	10	Swampers	2
Workers Helpers	15	Mechanic	1
Laborers	20	Welders	2
Office-Warehouse	4	Helpers	4
		Laborers	4
		Foreman	1
Total	**125**	**Total**	**20**
Permanent Positions			
Adelanto Management Office		**Adelanto Operations**	
General Manager	1	Safety Agency Liaison	1
Secretary	1	Draftsman	1
Engineer/ROW Agent	1	Mechanical Tech	1
Accountant	1	Electrical Tech	1
Clerk	1	Corrosion Tech	1
Chief Dispatcher	1	Communication Tech	1
Assistant Dispatcher	1	Welders	2
Operators	5	Pipeliners	5
		Secretary/Clerk	1
Total	**12**	**Total**	**14**

SOURCE: EIP Associates, Cajon Pipeline Company.

TABLE 5.9.1-3
EMPLOYMENT IMPACT[1]

Area	Employment Estimate		Project Employment		% Increase In Employment	
	1992	1993	1992	1993	1992	1993
SAN BERNARDINO STUDY AREA	253,120	263,646	187	11	0%	0%
Pipeline passes through:						
Adelanto	1,855	1,986	137	15	7%	1%
Fontana	27,134	28,237	125	0	0%	0%
Rancho Cucamonga	37,947	40,469	125	0	0%	0%
Ontario	57,978	61,277	125	0	0%	0%
Montclair	13,172	13,451	20	0	0%	0%
Victorville	14,892	15,534	20	0	0%	0%
Pipeline in the Vicinity of:						
Rialto	15,102	16,018	125	0	1%	0%
San Bernardino	85,040	86,676	125	0	0%	0%
Construction Employment	14,294	na	187	na	1%	na
LOS ANGELES STUDY AREA	697,121	703,741	40	15	0%	0%
Pipeline Passes Through:						
Carson	62,696	63,414	20	0	0%	0%
Compton	31,959	32,295	20	0	0%	0%
Downey	40,103	40,442	20	0	0%	0%
Industry	63,456	64,031	20	0	0%	0%
Long Beach	220,282	221,172	20	0	0%	0%
Montebello	27,322	27,548	20	0	0%	0%
Paramount	21,524	21,586	20	0	0%	0%
Pico Rivera	29,803	30,072	20	0	0%	0%
Pomona	60,549	61,884	20	0	0%	0%
South El Monte	21,487	21,617	20	0	0%	0%
South Gate	20,462	20,665	20	0	0%	0%
Unincorporated L.A. Co.	42,072	42,810	20	0	0%	0%
Pipeline In The Vicinity Of:						
Bell Gardens	8,788	8,789	20	0	0%	0%
Commerce	70,934	71,136	20	0	0%	0%
La Puente	6,556	10,510	20	0	0%	0%
Lynwood	11,876	16,736	20	0	0%	0%
West Covina	26,270	26,683	20	0	0%	0%
Construction Employment	77,518	na	40	na	0%	na

[1] Note that the calculations for 1992 relate to construction employment, and those for 1993 relate to permanent employment.

SOURCE: EIP Associates, SCAG Growth Management Plan. See also, Tables 5.8.1-5 and 5.8.1-2.

TABLE 5.9.1-4
DIRECT, TEMPORARY POPULATION/PUBLIC SERVICES IMPACT

Area	Population 1992	Project Construction Employment/ Population	% Temporary Population Increase
San Bernardino Study Area	591,261	187	0%
Pipeline Passes Through:			
Adelanto	6,597	137	2%
Fontana	72,343	125	0%
Rancho Cucamonga	103,034	125	0%
Ontario	118,838	125	0%
Montclair	27,035	20	0%
Victorville	36,042	20	0%
Pipeline in the Vicinity Of:			
Rialto	70,846	125	0%
San Bernardino	156,526	125	0%
Los Angeles Study Area	4,746,700	40	0%
Pipeline Passes Through:			
Carson	90,610	20	0%
Compton	93,374	20	0%
Downey	89,352	20	0%
Industry	454	20	4%
Long Beach	422,259	20	0%
Montebello	57,097	20	0%
Paramount	42,313	20	0%
Pico Rivera	56,374	20	0%
Pomona	124,573	20	0%
South El Monte	18,269	20	0%
South Gate	79,587	20	0%
Unincorporated L.A. Co.	360,522	20	0%
Pipeline In The Vicinity Of:			
Bell Gardens	38,055	20	0%
Commerce	11,782	20	0%
La Puente	33,649	20	0%
Lynwood	54,357	20	0%
West Covina	98,188	20	0%

SOURCE: EIP Associates, SCAG Growth Management Plan.

Mitigation Measure

5.9.1-3 *None required.*

Impact

5.9.1-4 **The project would increase permanent employment in Adelanto by 25 to 30 employees or 2 percent over the 1992 estimate of 1,855 local jobs.**

Permanent Employment. The project expects to staff its Adelanto operations with 25 to 30 employees. These positions would commence upon completion of the pipeline in 1994. This would be a small, *beneficial impact* on the local economy (see Table 5.9.1-3) in terms of increased spending and economic activity.

Mitigation Measure

5.9.1-4 *None required.*

Impact

5.9.1-5 **The worst case increase in demand for permanent housing would amount to 26 units in Adelanto, or 14 percent of the projected average annual increase.**

Indirect, Permanent Housing Demand/Population/Public Services Impact. The worst case assumption is that a maximum of 26 permanent jobs in Adelanto would be filled by non-local persons. This would create a demand for 26 housing units which would amount to 14 percent of the projected annual average increase in the housing supply. This would be a *less-than-significant impact* since the housing, population, and public service impacts are independent of the proposed project, and since the projected housing demand is not in excess of the projected supply.

Mitigation Measure

5.9.1-5 *None required.*

Impact

5.9.1-6 **The proposed project would not be expected to appreciably affect local jobs/housing balances.**

Jobs/Housing Balance Impact. The project's small increase in permanent employment would not be expected to adversely affect local or regional jobs/housing balance ratios. This is considered a *less-than-significant impact.*

Mitigation Measure

5.9.1-6 *None required.*

Impact

5.9.1-7 **The proposed project would increase property tax revenue within the study area by about $616,000 in 1993 or 3.4 percent of projected 1991/92 property tax revenue.**

Public Revenue Impact. The asset value of the project for public tax purposes is estimated to be $80 million dollars.[2] Thus, the basic property tax assessment of 1 percent of assessed valuation would yield $800,000 in 1993 property tax revenue. Approximately 77 percent of the improvement value lies within San Bernardino County.[3] The proposed project would increase San Bernardino County property tax revenue by $616,000 dollars beginning in 1993, or 3.4% of the 1992/92 projected revenues.[4] This would be considered a small but *beneficial impact.*

Mitigation Measure

5.9.1-7 *None required.*

Impact

5.9.1-8 **The proposed project would not disrupt any of the cities economically or socially.**

Economic or Social Disruption. The employment impacts are beneficial. Employment will increase not decrease. The proposed project would not remove or reduce access to any city's public institutions. The proposed project would not physically divide any of the cities through which it passes. As a result, the proposed project would have a *less-than-significant* economic or social disruption impact.

Mitigation Measure

5.9.1-8 *None required.*

LOS ANGELES STUDY AREA

Impact

5.9.1-9 **The local economy would be stimulated by a temporary increase in employment as the project would create 40 construction jobs lasting 60 to 70 days. This would be less than a 1 percent increase in 1992 construction employment and a 1 percent share of projected growth in construction employment.**

Construction Employment.[5] Pipeline construction is expected to begin in June 1993 and last for a 60 to 70 day period. Pipeline construction employment is estimated at 40 workers (20 on two street crews). Tables 5.9.1-1 and 5.9.1-2 above summarize the project's employment profile. Table 5.9.1-3 above summarizes the project's employment/economic impact. The temporary increase in construction employment would be a small but *beneficial impact* on the local economy.

Mitigation Measure

5.9.1-9 *None required.*

Impact

5.9.1-10 **The project would temporarily increase demand for housing for the 40 construction workers for a period of 60-70 days.**

Direct Temporary Housing Impact. Under the worst-case assumption that 75 of the construction workers would be non-local hires (see Table 5.9.1-1), the project would temporarily increase demand for temporary housing for the 30 construction workers for a period of 60-70 days. Given the urbanized nature of the area within a 170 mile round trip of the study area, adequate temporary accommodations would be expected to be available, and this impact would be considered a *less-than-significant.*

Mitigation Measure

5.9.1-10 *None required.*

Impact

5.9.1-11 **The project would temporarily increase population in the adjacent cities by less than 1 in all cases except for 4 percent in the City of Industry, and less than 1 percent for the study area as a whole.**

Direct, Temporary Population/Public Services Impacts. The percentage increase in the temporary population of adjacent cities is used as a proxy for generally assessing population/public service impacts of temporary construction employment. The analysis assesses such temporary impacts on the study areas themselves, and on each city, assuming impacts from total temporary employment. Thus, the assessment is a worst-case analysis for each city, since in reality, employment-related impact would be distributed throughout a number of cities and not be concentrated exclusively in one city. The most affected public service would be police, and resources for this, as well as many other public services, are estimated based on population. Usually, the estimate is made on the basis of one staff person (and associated resources) per 1,000 population. As Table 5.9.1-4 above illustrates, none of the cities in the study area would experience an increase in temporary population even approaching 1,000. Additionally, the duration of the increase is less than one year: 60-70 days within the entire study area for 40 workers. As a result, this impact would not be considered significant. Additionally, public utilities could be affected if increased demand for temporary housing required increased utility hook-ups. Temporary increases in population would not increase hook-ups, and therefore, utilities would not be affected. This would be a *less-than-significant impact.*

Mitigation Measure

5.9.1-11 *None required.*

Impact

5.9.1-12 **The proposed project would increase property tax revenue within the Study Area by about $184,000 or 0.2 percent of projected 1991/92 property tax revenues.**

Public Revenue Impact. The asset value of the project for public tax purposes is estimated to be $80 million dollars.[6] Thus, the basic property tax assessment of 1 percent of assessed valuation would yield $800,000 in 1993 property tax revenue. Approximately 23 percent of the improvement value lies within Los Angeles County.[7] The proposed project would increase Los Angeles County property tax revenue by $184,000 dollars beginning in 1993, or by 0.2 of the 1991/92 projected revenues.[8] This would be considered a small but *beneficial impact*.

Mitigation Measure

5.9.1-12 *None required.*

Impact

5.9.1-13 **The proposed project would not disrupt any of the cities economically or socially during construction, but in the event of an oil spill could temporarily affect local business or a recreational area.**

Economic or Social Disruption. The employment impacts are beneficial. Employment will increase not decrease. The proposed project would not remove or reduce access to any city's public institutions. The proposed project would not physically divide any of the cities through which it passes. As a result, the proposed project would have a *less-than-significant* economic or social disruption impact.

An oil spill occurring in an urban area could result in street closures, access limitations, and parking restriction. This would last for the duration of the clean-up operations. The extent of this impact would depend upon the size and nature of the spill. However, as impacts on business would be temporary, it is considered adverse but not significant. Similarly, impacts to recreational areas would result in closures for short period while cleanup operations are underway, and, though adverse, would not be significant.

Costs incurred as a result of an oil spill would include labor and equipment for cleanup activities and restoration, repair of the damaged pipeline, reimbursement for emergency response personnel, and lost income through non-operation of the pipeline and lost crude. The project proponent would be responsible for these costs. Impacts to the public would not be expected to occur, but could be *potentially significant*.

Mitigation Measures

5.9.1-13(a) *An Oil Spill Contingency Plan shall be developed which would include procedures for containing crude flow and preventing delivery to the storm drain or sewer systems. This plan shall be reviewed by the Emergency Response Review Committee. The committee shall provide recommendations to the Lead Agencies for implementation of the plan. This plan shall be finalized and approved by the Lead Agencies (BLM, USFS and City of Adelanto).*

5.9.1-13(b) *Implementation of Mitigation Measures in section 5.12 to contain and reduce spills.*

5.9.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative would require the same work force for construction and operation as described in Section 5.9.1. No additional impacts would occur.

5.9.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative would require the same work force for construction and operation as described in Section 5.9.1. No additional impacts would occur.

5.9.4 M-70 PIPELINE

Construction

According to the local pipeline union that would provide the work force for the M-70 Pipeline project (Local #250), there is an ample supply of workers in the project vicinity to fill all construction personnel needs of the proposed project from the local labor force.

Due to the small construction crew required, relative to the size of the workforce, there would be a small beneficial impact on employment. There would not be any permanent change in population associated with the proposed project.

Construction activity would occur at a designated location for 5 days. Access limitations could affect any business located directly adjacent to project construction. Limitations on access and adjacent parking could also occur for an additional 10 days, during construction in adjacent areas. Some inconvenience would be experienced by potential customers; however, access would not be completely restricted. This is a potentially significant impact on a short-term basis.

Operation

Operation of the proposed pipeline would not require any additional staff beyond that required to operate the existing line. The operational phase would have no impact on employment or population.

5.9.5 PACIFIC PIPELINE

Construction

The construction phase of the project is anticipated to begin in January 1994 and continue for a period of 14 months. The workforce would escalate from 50 workers the first month of construction to a peak of 605 during the fourth and sixth months of construction. The average construction workforce is estimated at 429.

It is anticipated that 90 percent of the workforce would be local to southern California, and therefore likely to commute to and from their permanent residence on a daily basis.

Due to the location of the construction activities, it is not anticipated that the influx of about 60 in-migrant workers or the impact of a peak construction workforce of about 605 would have a significant impact on the local area population, employment, housing, or infrastructure.

In 1989, there was an estimated labor force of 4.7 million in the three-country area. Approximately 4.6 million were employed, and of this total, an estimated 3.9 percent (177,500) were employed in the construction sector. New employment created by pipeline construction represents less than 1 percent of total construction employment in the study area.

Anticipated annual expenditures on pipeline materials and construction are estimated at $85 million in 1993 and $105 million in 1994. The estimated tax revenues generated for each county are shown in Table 5.9.6-1. The increased tax revenue for the state and each of the three counties would be considered a positive impact.

Construction activity would proceed at a rate of 300 to 500 feet per day in urban areas and would be at any one city block less than two or three days. Limitations on access to local business could affect businesses located directly adjacent to project construction. Limits to access and parking would inconvenience potential customers and may have a short-term adverse affect on business operations, but the impact would not be significant.

Operations

The life of the project is estimated to be 20 years. The pipeline is expected to be put into service by the middle of 1994. There would be an estimated 30 operations employees. An estimated $800,000 would be spent annually in the local economy on miscellaneous fuel, supplies, and repairs. The operations phase of the project could have a small positive effect and no negative impact on population, employment, housing, or local infrastructure.

5.9.7 FOUR CORNERS PIPELINE

This alternative would require the construction of four new pump stations and three new heater stations. Changes to valves along the pipeline route would also be required. Due to the small size of the construction crew required (approximately 15 to 30 workers) relative to the size of the workforce, there would be a small beneficial impact on employment in San Bernardino County. There would not be any permanent change in population associated with the proposed project.

5.9.8 NO PROJECT

The No Project alternative would result in increased importation of crude oil from outside of the United States. No construction would be required. No increase in employment would be anticipated as crude oil would be transported by existing facilities.

TABLE 5.9.6-1
CONTRIBUTION TO TAX BASE FOR THE PROPOSED PACIFIC PIPELINE

County	Miles of Pipeline	Tax Rate	Estimated Valuation of Pipeline	Estimated 1st and 2nd YeaR Tax Receipts
Proposed Project[1]				
Santa Barbara	44.0	1.019	$52,750,000	$537,000
Ventura	43.5	1.065	$52,145,000	$555,000
Los Angeles	71.0	1.057	$85,110,000	$900,000
Total	158.5		$190,000,000	$1,992,000

[1] Based on 1st and 2nd year construction and operations annual expenses provided by Rooney Engineering, July 1991. Includes the El Segundo Branch of the pipeline; excludes the existing pipeline in Ventura County.

ENDNOTES

1. Memo from Matt Elliot, Cajon Pipeline Company to Scott Edmondson, EIP Associates, October 8, 1991, and phone conversation with Matt Elliot and Ron Hinn, Cajon Pipeline Company, October 9, 1991.

2. Matt Elliot, Cajon Pipeline Company, Memo of October 8, 1991 and telephone conversation of October 11, 1991. The $80 million estimate covers pipes and other physical components of the project that will constitute the "asset" value of the project upon which property tax would be calculated and which would be depreciated over time.

3. The 12-Gauge Terminal two pump stations and 70% of the pipeline itself lie within San Bernardino County. Thirty percent of the pipeline lies within Los Angeles County. The net result is that 77% of the projects physical asset value lies within San Bernardino County.

4. Based upon the $18 million dollars in 1991/92 property tax revenues estimated for the San Bernardino Study Area in the Setting Section.

5. Memo from Matt Elliot, Cajon Pipeline Company to Scott Edmondson, EIP Associates, October 8, 1991, and phone conversation with Matt Elliot and Ron Hinn, Cajon Pipeline Company, October 9, 1991.

6. Matt Elliot, Cajon Pipeline Company, Memo of October 8, 1991 and telephone conversation of October 11, 1991. The $80 million estimate covers pipes and other physical components of the project that will constitute the "asset" value of the project upon which property tax would be calculated and which would be depreciated over time.

7. The 12-Gauge Terminal two pump stations and 70% of the pipeline itself lie within San Bernardino County. Thirty percent of the pipeline lies within Los Angeles County. The net result is that 77% of the projects physical asset value lies within San Bernardino County.

8. Based upon the $83.7 million dollars in 1991/92 property tax revenues estimated for Los Angeles County.

5.10 TRANSPORTATION AND CIRCULATION

5.10.1 CAJON PIPELINE

The main impacts associated with the project would involve the disruption of traffic on roadways which the pipeline crosses and also those locations where the pipeline runs close to, and parallel to, major roadways. Construction traffic would cause more delays on the roads and would reduce the effective level of service at nearby intersections. The impacts of project construction are greatly influenced by the construction method used. Pipeline construction methods are described in detail in Chapter 3 and are summarized here briefly for the convenience of the reader.

Construction Methods

Pipeline Construction

Construction would be undertaken by several crews or spreads. A spread consists of the men and machines needed to install the pipeline. In undeveloped desert areas a spread would lay 1.5 miles of pipe each day. In urban areas about 0.25 to 0.50 mile per day would be laid.

A construction spread requires a minimum amount of working area to excavate the ditch and install the pipe. In desert areas and other portions of the route where space is available, the width of the working area would be about 70 feet. In urban areas where space is at a premium, the width of the working area would be reduced to 25 feet. No more than one travel lane of roadways would be closed during construction. Two-way traffic movement would be maintained at all times on major streets. A typical cross-section in an urban area is shown in Figure 3-6.

To reduce traffic and rail service disruption, Cajon Pipeline Company proposes to bore and jack many of the highway and all of the rail crossings. The bore and jack technique involves boring a hole horizontally under a highway or railroad and jacking or forcing the pipe into the aperture. No highway lane closures or suspension of railroad service is necessary. Highway crossings where this technique would be used are listed in Table 4.10.1-1.

Standards of Significance

Based on professional judgement and Appendix G of the CEQA Guidelines, traffic impacts are considered significant if one or more of the following conditions would result from implementation of the proposed project:

- The traffic increase, particularly over the long-term, would cause unstable traffic flow, congestion, and/or a substantial increase in average travel time.

- Traffic delays of more than 60 minutes on minor arterials are incurred as a result of pipeline construction during the off-peak. A period of 30 minutes would be used for major arterials.

- There is a permanent impact on the road or rail network, other pipelines or electrical power transmission.

- Emergency access would be precluded by pipeline construction.

Evaluation of the significance of project impacts in relation to these criteria is provided in the following discussion.

IMPACTS AND MITIGATION MEASURES

Impact

5.10.1-1 **The pipeline route would require construction within road right-of-ways which may result in interruption to traffic flow.**

Fifty-eight miles of the pipeline would be located within urban roadway right-of-ways. The remainder of the route would be located within rarely-travelled rural roads, forestry roads, agricultural land and flood control channels. The route would cross state highways 17 times. All of these crossings, except the crossing of Rosemead Boulevard (State Route 19), would be undertaken by boring or by trenching under an existing underpass. Traffic flow on these roads would not be interrupted in any way. Construction impacts, such as the closure of lanes, would impact the urban roads to varying degrees, depending upon existing operational characteristics. The impacts to each road segment is discussed below.

From M.P. 0 to M.P. 84, the route would follow unimproved BLM roads, local streets of Adelanto, forestry roads and some frontage roads. The BLM roads are very infrequently travelled and average daily traffic (ADT) volumes of substantially less than 200 vehicles occur on the Adelanto local streets. These roads operate at under capacity. Closure of one lane of traffic during construction would be anticipated to have an adverse, but not significant impact on the operation characteristics of the frontage and local roads. No significant adverse impacts to off-street parking areas, access to properties or operation of emergency response vehicles would be expected to occur.

From M.P. 87.5 to M.P. 101.6, construction would result in closure of one lane of Philadelphia Street, Mission Boulevard, Ontario Boulevard, State Street and First Street. Along Mission Boulevard the pipeline would be located within the median strip but would require an additional lane-width for construction access. Along Ontario Boulevard, State Street, and First Street the pipeline would be adjacent to the Southern Pacific railway right-of-way and would result in one lane of the two-lane street being closed for the length of the construction spread. For all major intersections along these streets, the cross street would be bored and not trenched. Closure of one lane of traffic during construction is anticipated to have an adverse but not significant impact on the operation characteristics of the frontage and local roads. No significant adverse impacts to off-street parking areas, access to properties or operation of emergency response vehicles would be expected to occur.

From M.P. 102.6 to M.P. 104.2, the route would be located within the right-of-way of Pomona Boulevard. Pomona Boulevard is a major arterial of 4 lanes with ADT of 10,124 and peak traffic of 1,278. Construction would close one lane of the street and would result in peak hour congestion and delay. If construction was undertaken in non-peak hours times, no significant adverse impacts would occur. From MP 104.2 to MP 104.6, the route would be located in Valley Boulevard, a divided major arterial of four lanes with ADT of 23,000, which is the access to the Spadra Landfill. Significant adverse impacts will occur during construction, which must be mitigated.

From M.P. 107.4 to M.P. 117, the route would be located within urban streets of the City of Industry (reference Table 4.10.1-1). The majority of these streets are wide thoroughfares. Though construction would occupy one lane of traffic, the width of the streets are such that traffic can be diverted around construction works. Traffic in these area is generated by the surrounding industrial uses. Construction would be anticipated to have an adverse but not significant impact on the operation characteristics of these local roads. No significant adverse impacts to off-street parking areas, access to properties or operation of emergency response vehicles would be expected to occur.

At M.P. 116.2, the route parallels 0.3 miles of 7th Avenue, a 4-lane roadway with 27,926 ADT and peak hour traffic of 2,221 vehicles. Construction would close one lane of the roadway and would result in peak hour congestion and delay.

From M.P. 118 to M.P. 123, the route would parallel roadways within the City of Industry, Los Angeles County and South El Monte. Construction would result in closure of one lane. Construction at the intersection of Rosemead Boulevard and Durfee road could result in congestion, and vehicle delay through several phases of the traffic signal during peak hours. If construction was undertaken in non-peak hours times, no significant adverse impacts would occur. No significant adverse impacts to off-street parking areas, access to properties or operation of emergency response vehicles would be expected to occur.

From M.P. 138.6 to M.P. 142, the route would be located adjacent to the right-of-way of the Dominguez Channel. The route crosses the I-710 and I-405, both of which would be bored. Significant impacts to traffic flow would not be anticipated in this segment of the pipeline route.

Mitigation Measure

5.10.1-1(a) *The Transportation Management Element of the COM Plan shall be prepared to detail specific roadway construction information; signing for closures; and public notification identifying location, scheduling and duration of construction spread. This management plan shall also include Traffic Control Plans as required by local jurisdictions through which the pipeline route passes. This element shall be finalized and approved by the Lead Agencies (BLM, USFS, and the City of Adelanto).*

5.10.1-1(b) *On roadways where trenching shall occur within the roadway right-of-way, one travel lane shall be left open in each direction, delineated by temporary traffic cones/barricades. For minor collectors and neighborhood streets, one lane shall be left open with signal persons to direct through traffic. These street closures shall occur in coordination with city staff from each jurisdiction. Specific locations where two-way traffic is required shall be identified in consultation with city staff.*

5.10.1-1(c) *Construction work on major roadways and through major signalized intersections shall be conducted in off-peak periods (the hours outside of weekday peak commute hours of 7:00 a.m. to 9:00 p.m. and 3:30 p.m. to 6:00 p.m.), except where the city has requested otherwise to alleviate traffic impacts.*

5.10.1-1(d) *Construction trenches shall not be left open, but covered by steel plate to allow access to private and commercial driveways. For safety of bicyclists, asphalt shall be placed around edges of steel plates to secure them and to eliminate abrupt edges.*

5.10.1-1(e) *All County and municipal fire, police and paramedic departments shall be notified regarding the schedule and duration of construction activities. Alternative routes shall be identified that may be used to avoid construction areas.*

5.10.1-1(f) *Coordination shall be undertaken with appropriate transit authorities to ensure uninterrupted service along bus or train routes which shall be crossed or paralleled by pipeline construction. Transit stop locations shall be relocated as necessary in coordination with appropriate agencies to provide access during construction.*

Implementation of these mitigation measures would reduce this impact to a *less-than-significant* level.

Impact

5.10.1-2 Construction traffic and equipment staging may disrupt traffic movement.

The traffic associated with pipeline construction would involve about 20 truck trips per day carrying pipeline segments. Delivery of material and departure are considered separate trips. In addition, about

2 truck trips per day can be expected delivering pipeline connectors. Assuming a passenger car equivalency (PCE) of 2.0 per truck, this represents about 44 PCE trips. In addition the labor force would arrive in the morning in about 16 vehicles with the same number departing in the evening. The maximum expected peak hour traffic volume associated with pipeline construction would be about 20 vehicles (4.4 + 16 assuming 10 percent of the truck traffic arrives/departs in a peak hour). This is considered a *significant impact.*

Mitigation Measure

5.10.1-2(a) *Staging areas for construction equipment and truck traffic shall be located off of the adjacent roadway.*

5.10.1-2(b) *Heavy machinery such as cranes and boring equipment shall be delivered to each site in the off-peak periods, preferably at night (but outside of the hours 6:00 Am - 9:00 AM and 3:00 PM - 6:00 PM).*

5.10.1-2(c) *Off-street parking for worker vehicles shall be provided in areas where parking is limited.*

Implementation of these mitigation measures would reduce this impact to a *less-than-significant* level.

Impact

5.10.1-3 **Pipeline construction would require excavation across rural roads within public lands from M.P. 0 to M.P. 65.**

In Forest Service lands, rural roads are constructed to special specifications to ensure adequate drainage in order to reduce the maintenance required to maintain an adequate road surface. Excavation would result in disruption of the road surfaces and possibly result in increased maintenance requirements if the roadway is not returned to an adequate condition. In addition, forest roads are maintained over the time by a variety of personnel and contractors who may not be familiar with the pipeline location. This is considered a *significant impact.*

Mitigation Measures

5.10.1-3(a) *Roads that cross public lands under the jurisdiction of the BLM shall be returned to the existing alignment and condition under the supervision of the BLM.*

5.10.1-3(b) *Roads within Forest Service lands shall be maintained as "roll-and-dip" preserving both existing vertical and horizontal alignment and reconstructed to the specifications of a Forest Engineer. This includes backfilling of the roadbed to 90 percent of maximum density as determined by AASHTO T-180 (American Association of State Highway and Transportation Officials) or ASTM D-1557 (American Society of Testing and Materials), and compacting disturbed soils near the roadbed to 100 percent of the density of adjacent soils.*

5.10.1-3(c) *Forest roads interrupted by pipeline construction will have the duration of such interruption kept to a minimum, due to Forest Service needs for emergency fire access to the remote areas these roads serve. In addition, during such disruption, a reasonable detour will be provided in the immediate area by the contractor.*

5.10.1-3(d) *To facilitate future Forest Service road maintenance, all structures appurtenant to the main pipe itself (such as cathodic test stations or route signing) will be located outside of the roadway, in such a manner as to not interfere with road maintenance activities.*

5.10.1-3(e) *Pipeline burial depth within Forest roadways will be at least four feet to the top of the pipe, except where such roads cross drainages, and then such depth will be at least six feet to the top of the pipe. In addition, in all locations in which pipeline is located within Forest roadways, identification tape will be buried two feet above the top of the pipe.*

5.10.1-3(f) *In order to facilitate forest fire service access along Baldy Mesa Road, USFS will require that up to 13 feet width will be open to traffic by 12 noon each day of construction. The roadway shall be capable of supporting 2,800 lbs.*

Implementation of this mitigation measure would reduce this impact to a *less-than-significant* level.

Impact

5.10.1-4 An accidental oil spill would result in traffic congestion during emergency response and clean-up.

An oil spill would probably result in partial or full street closure at the point of pipe rupture, as access would be required for emergency response vehicles. Partial street closure may continue until the pipeline is repaired and clean-up and restoration efforts are complete. These impacts would be temporary and are not considered significant.

Mitigation Measure

5.10.1-4 *None required.*

5.10.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative would result in similar impacts to transportation and circulation as discussed in Section 5.110.1 (Impacts 5.10.1-1 through 5.10.1-4).

5.10.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative would result in two additional crossings of the I-15. Additional consultation with Caltrans would be required if this alternative was selected. Remaining traffic impacts would be as discussed in Section 5.10.1 (Impacts 5.10.1-1 through 5.10.1-4).

5.10.4 M-70 PIPELINE

Construction

A moving 24-foot width construction area would be required along each segment of roadway for trenching, placement of pipeline, backfilling and access by construction vehicles and equipment. To accommodate this area, a minimum closure of one travel lane of roadways and roadway intersections would be required. In areas where lane widths are nonstandard or extensive roadside development occurs, the construction area may require two lane closures. In addition, roadway shoulders in rural areas of Segments 1 and 2 and sidewalks in Segments 3 may be temporarily closed as well to provide access to the construction work area. However, two-way traffic would be maintained on all major roadways during construction.

Segment 1

From Lebec Station to M.P. 41, the proposed route generally parallels rural Interstate 5 (I-5) frontage roads, portions of the Old Road, unimproved utility maintenance and Forest Service roads. Because these roads generally operate at under capacity, closure of one lane of traffic during construction is not considered a significant impact. Closure of one lane on the section of the Old Road, between State Route 126 (SR-126) and Magic Mountain Parkway, would result in peak hour congestion and delay. Significant adverse impacts associated with peak hour capacity constraints for vehicles turning from SR 126 to southbound Old Road and delay at the I-5 interchange with Magic Mountain Parkway are expected to occur.

Segment 2

No significant adverse impacts are expected to occur on segments of SR 126 north of Valencia Boulevard. However, due to the close intervals of signalized intersections and the numerous cross streets and driveways, pipeline construction and lane closures would result in significant adverse traffic impacts during the peak and nonpeak hours. In addition, local neighborhood streets may be closed, prohibiting local traffic circulation, access to driveways and availability of on-street parking during the duration of construction. Significant adverse impacts are expected to occur for approximately three to four days in the urbanized portion of Santa Clarita.

The two line section of San Fernando Road and Sierra Highway from the Antelope Freeway to Balboa Boulevard operates at a level of service D during the peak hour. A lane closure would result in a deterioration to a level of service E or F. This would be a significant adverse impact.

Segment 3

The majority of all roadway segments operate at a level of service E or F during the peak hour. Pipeline construction would reduce road capacity between 25 and 50 percent. In addition, construction at intersections would result in congestion, vehicle delay through several signal phases. Cross-street traffic would also be constricted where lane closures occur at intersections. The level of service would deteriorate to a level of service F. In addition, on-street parking and access to commercial or residential parking structures may be restricted or eliminated entirely in areas where parking is provided.

Mitigation measures for construction scheduling, such as construction hours, possible night-time construction, and permitting full road widths during designated legal holidays would reduce impacts to peak traffic flow.

5.10-5 PACIFIC PIPELINE

The Pacific Pipeline project could potentially influence transportation in the study area in two ways: 1) by generating additional traffic demand on existing transportation facilities, or 2) by impeding traffic flow with physical obstructions or safety-related operational changes. A pipeline is inherently more likely to generate transportation effects during construction than during operations because after construction is completed, there is only a minimal amount of surface activity required for operation.

Segment 1

In Segment 1, the pipeline would be constructed entirely in the Southern Pacific Railroad ROW. The railroad ROW is narrow and abuts the US-101 ROW. It would not be necessary to obstruct any of the travel on the highway or railroad but barriers would be placed for motorist safety and minor speed reductions on the rail line maybe required.

Segment 2

Segment 2 of the project, through Goleta, Santa Barbara, and Montecito, would be constructed entirely in Southern Pacific Railroad ROW with access from local street. There would not be any street obstructions required to construct the pipeline on Segment 2. Several crossings are grade separated; all others would be bored. It may be necessary to encroach on street ROW for Modoc Road at the Las Palmas Drive/La Cumbre Road underpass, but traffic flow should not be significantly reduced.

Segment 3

Segment 3 of the project would be constructed entirely within Southern Pacific Railroad ROW between Montecito and Sea Cliff. Construction on some parts of Segment 3 would require construction materials vehicle access through small communities. This would be an adverse effect, but it would occur for only a short duration. All paved streets and roads on Segment 3 would be bored, so no major arteries would be obstructed. Concrete construction barriers would be used, as on Segment 1 to protect workers and motorists. US-101 has ample capacity to absorb brief, minor flow reductions from "gaper's blocks" without significant adverse effects on traffic.

Segment 4

Heavy vehicle traffic in the communities of Montalvo, Saticoy, Santa Paula, Fillmore, and Piru would be an adverse, temporary and transient impact, but the fast pace of construction in this area (about 0.5 to 1 mile per day) would minimize the duration of the effect and prevent it from being significant. No significant obstruction of major streets would occur with construction of Segment 4.

Segment 5

The key roadways for Segment 5 would be SR-126 and The Old Road. There is ample capacity to handle construction traffic except during peak hours along SR-126 between Piru and Castaic Junction. Construction traffic effects would be adverse, but not significant.

Segment 6

Pipeline construction along Segment 6 of the project would take place within the Southern Pacific Railroad ROW for the Saugus Branch mainline. The Southern Pacific Railroad ROW is sufficiently wide that it would not be necessary for construction-related activity to encroach on San Fernando Road, which adjoins the railroad ROW along much of this segment. Boring would be used to construct all street crossings along Segment 6, so there would be no significant closure or other obstruction of streets for this segment.

Rail traffic on the Saugus Line would not be disrupted by construction along this segment. The eight trains per day operate at limited speeds through this urban area under normal conditions. Construction planned in conjunction with railroad staff and monitored by on-site Southern Pacific Railroad representatives would result in no increased hazards to either rail traffic or construction activities.

Segment 7

Construction of the project from the Cornfield Yard south to 25th Street would take place in the center of Spring Street and Alameda Street, a 60- to 74-foot wide downtown urban street. Due to the street traffic, construction would not be permitted during peak periods and would be required to be undertaken at night to avoid daytime congestion.

Segment 8

Construction of the project on Segment 8 would occur within the active ROW of the San Pedro branch of the Southern Pacific Railroad. The San Pedro Branch carries 14 to 20 trains per day, all freights, most of which are slow-moving switching and train make up movements related to industries along the line and shipments in or out of the Port of Long Beach. No significant interference with rail traffic on the San Pedro Branch is anticipated. East Alameda Street would have a lane closed for 300 to 500 feet at a time adjacent to the construction area between 25th Street and Rosecrans Avenue (about 12.5 miles in total distance). Construction traffic would not affect West Alameda. From Rosecrans Avenue to the Wilmington Refinery the pipeline would be entirely within the railroad ROW.

To facilitate construction and access, it would be necessary to restrict parking on East Alameda in some places. Parking closures would typically last for only 2 to 3 days at any given location. Access to businesses fronting on East Alameda would be maintained throughout construction.

5.10.6 FOUR-CORNERS PIPELINE

The use of the existing Four Corners Line 90 Pipeline would require construction of three new heater stations and four new pump stations. Construction traffic at these sites could potentially interrupt local traffic flow, however disruption would occur for a short period. These impacts are therefore considered adverse but not significant.

5.10.7 NO PROJECT

The No Project alternative would result in an increase in the importation of crude oil from outside of the United States. No construction would be required as the existing harbor facilities would be utilized. Scheduling at the port facilities would be required to accommodate additional tankering but no significant impacts would be anticipated.

5.11 CULTURAL AND PALEONTOLOGICAL RESOURCES

5.11.1 CAJON PIPELINE

The potential impacts to cultural resources was assessed by a review of the files and records compiled by the regional information centers of the California Archaeological Inventory located at the San Bernardino County Museum in Redlands and the University of California, Los Angeles. A field survey was undertaken to examine the entire 70-foot wide pipeline corridor. Furthermore, some portions of the corridor, this survey was extended up to 500 feet to locate evidence of cultural resources.

The Bureau of Land Management will not issue any decisions which may result in impacts to cultural resources without first having met the requirements of Section 106 of the National Historic Preservation Act of 1966 (as amended). All results of the Section 106 consultation will be incorporated into the *Record of Decision.* Please note that recommendations presented in this document may change somewhat during the consultation process, including recommendations of eligibility for inclusion on the National Register, recommendations of project effect and recommendations for cultural resource mitigation.

Standards of Significance

Significance takes many forms, and may have historical, scientific (research), ethnic, public, and legal aspects. Section 106 of the National Historic Preservation Act of 1966 (80 STAT. 915) requires that federal, federally assisted, and federally-licensed undertakings affecting cultural properties listed on or eligible for the National Register of Historic Places (NRHP), be submitted to the Advisory Council on Historic Preservation (ACHP) for review and comment prior to project approval by the responsible Federal agency. Section 106 consultations for actions under the authority of the BLM in the State of California are guided by the provisions of a programmatic agreement negotiated among the BLM, State Historic Preservation Officer, and the Advisory Council on Historic Preservation.

Section 106 consultation for the Cajon Pipeline has not been completed. Recomendations of cultural resources significance and the level of anticipated impacts, as well as recommendations for mitigation, have been made, but will not be final until consultation is complete. Therefore, mitigations may change somewhat as a result of consultation.

For the purposes of this assessment, the eligibility of cultural resources to the NRHP is defined by the criteria in National Park Service rules 36 CFR 60.4:

In accordance with the CEQA Guidelines and the above definition of a significant cultural resource, a project would have a significant impact on cultural resources if it would:

- Disrupt or adversely affect a prehistoric or historic archaeological site or a property of historic or cultural significance to a community or ethnic group, or a paleontological site, except as a part of a scientific study;
- Result in direct adverse impacts (e.g. ground-disturbance and construction activities) or indirect adverse impacts (e.g. vandalism, increased erosion, or vibration during heavy grading) to cultural resources;
- Affect a landmark of local cultural/historical importance; or,
- Restrict existing religious or sacred uses within the potential impact area.

McKenna et al. evaluation of the significance of project-specific impacts in relation to this criteria and measures to mitigate project-specific impacts are provided in the following discussion.

IMPACTS AND MITIGATION MEASURES

Impact

5.11.1-1 **Pipeline construction would result in the disruption and potential impacts to only one potentially significant archaeological resource, CA-SBR-7086, a prehistoric site.**

The majority of the sites in the northern portions of the route were reassessed as insignificant sites with little potential to yield significant data. Other sites, identified by larger and more consistent remains, were recommended by McKenna et al. for future studies. Historic sites will be avoided and therefore, not impacted, given the nature of their remains. The roadways are noted, but project impacts are negligible and will not compromise integrity. Railroad and bridge crossings are present but none reflect situations where the proposed project will significantly impact them. McKenna et al. recommendations for minimizing impacts are presented below.

Listing previously recorded sites, McKenna et al. recommended monitoring, mitigation, or avoidance dependent upon the degree to which the cultural resources were impacted. For the proposed alignment, 56 sites would not be impacted, 9 require monitoring and 1 requires mitigation. Sites requiring this additional investigation are listed in Table 5.11.1-1, and are summarized below.

CA-LAN-1046

Based on data recorded earlier, McKenna et al. recommends that the area of this site, approximately 300 meters along the Valley Boulevard alignment, be monitored by a qualified archaeologist with both historic and prehistoric expertise.

CA-SBR-2257

In light of the many descriptions of this site and the attempts to identify eligible portions of this large quarry site, McKenna et al. recommends that the area of CA-SBR-2577 be considered archaeologically sensitive. Archaeological monitoring is recommended for this area of the pipeline corridor and, as is the case of other areas to be monitored, the archaeological monitor must have the authority to halt any activities associated with the pipeline that are disturbing potentially eligible remains, consult with lead agencies, and make determinations as to the treatment of any resources uncovered as a result of the pipeline project.

CA-SBR-7086

The proposed project will directly impact this site as the right-of-way bisects this site and will impact deposits on both sides of the access road. The proposed pipeline will destroy this site if avoidance is not feasible. If not avoidable, McKenna et al. recommends a mitigation program for this site consisting of artifact recovery via surface and subsurface collections, analysis, and report production addressing the issues identified by the materials. The mitigation program must be conducted at a level resulting in the negation of adverse impacts to this site.

CA-SBR-4252H

Although this is an historical alignment, previous disturbances along the route have already impacted its integrity. Areas peripheral to Baldy Mesa Road (specifically south of Phelan Road) may yield prehistoric remains and, therefore, McKenna et al. does recommend a limited amount of archaeological monitoring along this portion of the alignment, specifically between Highway 138 and Phelan Road.

CA-SBR-6793H

Due to the eligibility of these early remains, McKenna et al. recommends that the early tracks and other early railroad remnants be avoided and all activities associated with the placement of the proposed pipeline be kept away from these components of CA-SBR-6793. The placement of the pipeline should not interfere with the integrity of these features and the aesthetics/visual integrity of the bridge should not be compromised.

The activities associated with the construction of the pipeline will be restricted to the narrow corridor running through the underpass at this railroad crossing. In keeping within the planned avoidance of impacts, no mitigation program will be necessary. The U.S.F.S. archaeologist has accepted responsibility for the monitoring of this area to insure avoidance of the resource and protection from any adverse impacts.

CA-SBR-7093H

The proposed Cajon Pipeline corridor is scheduled to pass between the two bridges of this site and will be buried. The area is open and working area will permit avoidance of impacts to either structure. Since neither bridge has been determined to be eligible and since no impacts are expected, McKenna et al.

recommends that no further studies be conducted at this time. The U.S.F.S. archaeologist has accepted the responsibility to spot-check this area and insure the protection for these structures.

P1333-10H

The proposed pipeline alignment, as designed, will not directly impact any known component of the Cozy Dell complex. The alignment will avoid all structures and current work areas and remain outside the reported boundaries of the historic activities. However, since there is a potential for buried resources in areas outside the currently identified complex boundaries, McKenna et al., in consultation with the U.S.F.S. archaeologist, has recommended spot-monitoring by the U.S.F.S. archaeologist and the subsequent evaluation of any resource which may be uncovered as a result of the proposed pipeline project.

P1333-12H

This particular area of the pipeline right-of-way provides a very narrow corridor for construction. Although with Forest Service lands, the right-of-way in this area is actually less than 50 feet wide - bounded by Interstate 15 and sheer-face embankments. In consultation with U.S.F.S. personnel, the proponents of the Cajon Pipeline have agreed to avoid any impacts to this resource. McKenna et al. (and the U.S.F.S. personnel) has since recommended that the monument be avoided and the U.S.F.S. archaeologist spot-monitor this location to insure its protection.

P1333-13H

The walls noted within this site are to be avoided by the proposed construction. Therefore, McKenna et al. has determined that these walls are outside the defined A.P.E., and has recommended that an evaluation of these wall segments be deferred until such time as these walls will be impacted by a future project.

McKenna et al. No. 3

McKenna et al., in consultation with the U.S.F.S. archaeologist and the Cajon Pipeline proponent, has been informed that the proposed pipeline will not impact this structure, but pass underneath it via boring and open excavations. The proponent will submit formal plans for the avoidance of this resource to the Bureau of Land Management. Upon approval of the proposed plan, no other mitigation measures will be necessary. However, McKenna et al. has recommended that the U.S. Forest Service archaeologist spot-check this area during the construction of the pipeline to insure that no impacts occur.

In addition to the direct association of known sites, archaeological monitoring has been recommended by McKenna et al. between M.P. 46 and M.P. 72, encompassing the Cajon Pass and regions just north and south of the pass. Spot monitoring within the area of the City of Industry has also been recommended by McKenna et al. where the pipeline deviates from the existing channels — in this case, between M.P. 101 and 104.5.

TABLE 5.11.1-1
ARCHAEOLOGICAL RESOURCES WITHIN THE CAJON PIPELINE AREA OF POTENTIAL EFFECT REQUIRING ADDITIONAL INVESTIGATION

Site Number	Description	Recommendation
CA-LAN-1046	Prehistoric/historic habitation site	Monitor
CA-SBR-2257	Prehistoric quarry	Monitor
CA-SBR-7086	Prehistoric lithic scatter	Mitigate
CA-SBR-4252H	Old Baldy Mesa Road	Monitor
CA-SBR-6793H	Railroad crossing	Monitor
CA-SBR-7093H	Railroad and vehicle bridges	Monitor
P1333-10H	Cozy Dell complex	Monitor
P1333-12H	Pioneer Monument	Monitor
P1333-13H	Historic wall alignments	Monitor
McKenna #3	Railroad crossing	Monitor

Mitigation Measures

5.11.1-1(a) *Monitoring of the resources listed in Table 5.11.1-1 shall be completed by a certified/trained archaeological monitor under the supervision of a certified Principal Investigator. Any resources identified as a result of monitoring must be evaluated in accordance with federal regulations.*

5.11.1-1(b) *Mitigation of the prehistoric site, CA-SBR-7086 must include a recovery of the surface materials using spatial controls and a series of subsurface testing units to ensure adequate data recovery to minimize adverse impact to the sites. Studies must be completed by trained personnel and under consultation with the Bureau of Land Management, overseer for this site should any cultural resources be excavated or collected as part of mitigation for the project. These resources shall be curated in accordance with Federal Standards.*

Implementation of these mitigation measures, would reduce this impact to a *less-than-significant* level.

Impact

5.11.1-2 **Approximately 86 miles of the Cajon Pipeline route was identified as having a high potential of containing significant paleontological resources.**

Approximately 86 miles of the pipeline route were identified as having a high potential for paleontological resources (Table 4.11.1-2 and the Technical Appendices). These resources could provide information relating to the depositional sequence within the southwestern Great Basin and provide significant new scientific information. Construction would result in a disruption and loss of these resources if retrieval was not undertaken. This is considered a significant impact.

Mitigation Measure

5.11.1-2(a) *A qualified paleontologist shall be retained to perform inspections of excavation and to salvage exposed fossils within the areas designated as having a high potential for paleontological resources. Standard samples (2.4 cubic meters) shall be undertaken as recommended for specific areas within the Paleontologic Technical Report. The right-of-way excavation shall be inspected after brushing and the trench immediately after excavation. The paleontologist shall have the authority to halt excavation equipment when fossil resources are encountered in order to facilitate fossil removal.*

5.11.1-2(b) A curation program shall be undertaken which includes preparation of recovered specimens to a point of identification, including screen washing fossiliferous sediment samples to recover small to microscopic vertebrate fossils and preparation of large fossils recovered in plaster jackets. Specimens shall be identified and curated into retrievable storage collections of the Earth Sciences Division of the San Bernardino County Museum.

5.11.1-2(c) A final report, including an itemized and assessioned inventory of recovered specimens, shall be distributed to the appropriate Lead Agencies. The acceptance of the report by the BLM shall signify completion of the paleontologic program.

Implementation of this mitigation measure would reduce this impact to a *less-than-significant* level.

5.11.2 KRAMER SEGMENT ALTERNATIVE

Construction along the Kramer Alternative could impact the two additional identified sites, SBR-5361 and SBR-5362, but would not impact CA-SBR-2257. McKenna et al. has recommended that both these sites be considered sensitive/significant and monitoring be conducted, should the alternative be implemented. Should evidence of the site be re-identified, evaluation of the remains in compliance with Section 106 can be completed at that time.

5.11.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

As previously stated, no cultural investigations have been yet undertaken for the portions of this alternative between M.P.73 and M.P.74. Should other prevailing environmental constraints dictate that the Sycamore

5.11.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

As previously stated, no cultural investigations have been yet undertaken for the portions of this alternative between M.P.73 and M.P.74. Should other prevailing environmental constraints dictate that the Sycamore Segment Alternative become a portion of the Cajon Pipeline alignment, a full records search and field survey should be undertaken and approved prior to the issuance of any construction permits.

5.11.4 M-70 PIPELINE

Construction activities for the M-70 Pipeline may impact the village site LAN-77 located adjacent to Milepost 22.2. As presently described, LAN-77 is located on the opposite bank of Piru Creek from the proposed route. However, Angeles National Forest records indicated that during construction of highway 99 much of this site was disturbed and/or buried and may still exist under the existent roadway. Mitigation measures requiring monitoring by a qualified archaeologist during construction are recommended. Pipeline operation would not result in any significant impacts to cultural resources. Significant portions of the pipeline route were identified as having a high potential for paleontological resources. Monitoring of these locations would be required.

5.11.5 PACIFIC PIPELINE

Construction of the Pacific Pipeline would adversely affect four cultural resources and may affect a further 19 sites. Of these, four sites have yielded and 19 may possibly yield, information important in prehistory or history. Shovel testing or auger holes is recommended for all the sites impacted to determine the significance of the site. Monitoring by a qualified archaeologist is recommended during construction. The operation of the pipeline would have no impact on cultural resources.

5.11.6 FOUR CORNERS PIPELINE

The use of the Four Corners Line 90 Pipeline would require construction of three heater stations and four pump stations. It is likely that these facilities would be located near Sheephole Pass, Twenty-nine Palms, Morongo Valley and Moreno Pass. Before construction occurs archaeological investigation of the proposed sites would be required and suitable mitigations undertaken for any significant cultural resources. Mitigation measures would be incorporated into the project to reduce the impacts to cultural resources to less-than-significant. The exact location of the stations is not known, however, if construction occurs within the existing Cahuilli reservation, permits would be also required from the Bureau of Indian Affairs.

5.11.7 NO PROJECT

The No Project alternative would result in increased importation of crude oil from outside of the United States. It would not require any construction but would result in increased usage of the marine tankering facilities in Long Beach Harbor. No impacts to archaeological or paleontological resources would occur.

5.12 SYSTEM SAFETY AND RELIABILITY

5.12.1 CAJON PIPELINE

This analysis describes the risks and consequences of possible upset condition hazards associated with the proposed project, identifies areas that can be improved, and proposes mitigation measures that may be technically and economically feasible. The following topics were considered in the analysis:

- Pipeline Hazards
- Tank Farm Hazards
- Pumping Station Hazards

The system safety analysis is based on, a review of design criteria, project construction and operating procedures. Documents were reviewed for compliance with pertinent regulations and industry standards (i.e., fire hazards, oil spill contingency plans). Analysis of other similar projects such as the PACTEX Project[1] and Celeron All American[2] were also reviewed. Second, the Cajon Pipeline project proposed leak detection system was reviewed to estimate the potential for significant spills. Third, historic data was gathered to estimate the frequency and magnitude of significant oil spills. Fourth, spills were evaluated for their implications to public safety.

Compliance and Regulations

This section reviews the major standards and codes associated with the construction and operation of crude oil pipelines and storage tanks. Cajon's plans have been reviewed against these requirements. Recommendations are made, as appropriate, in the mitigation section, to fine tune the design and operational procedures to maximize health, safety, and environmental protection.

The standards and codes reviewed consist of the following:

- Liquid Transportation Systems for Hydrocarbons, ANSI B31.4
- Welded Steel Tanks for Oil Storage, ANSI 650
- Welding of Pipelines and Related Facilities, API 1104
- Specifications for Pipeline Values, API 60

- Oil Pollution Prevention, 40 CFR Part 112

- Transportation of Hazardous Liquids by Pipeline, 49 CFR Part 195

- California Pipeline Safety Act, California Code 5.5

- Flammable and Combustible Liquids Code, NFPA 30

A summary of these appear in the Technical Appendices. Below, the key elements concerning Cajon's design, construction, operation and maintenance, which promote safety and reliability are reviewed.

Design and Construction

The Cajon terminal will contain five floating roof tanks. They will be equipped with automatic overflow protection alarms. Secondary containment, with a capacity of 125% of the tanks, will be provided. Fire fighting equipment and a plan will be provided. The plan will include involvement of local fire fighting capabilities.

The pipeline will have a minimum yield strength of 60,000 psi and a wall thickness of 0.312 inch. Wall thickness will be increased to .500 inches for major river crossings. Crossings of roads and railroads will including encasing the pipeline in steel or concrete. The pipeline will be insulated and have an external coating and cathodic protection to minimize corrosion.

Valves along the pipeline will include:

- Block/check valves approximately every 2.95 miles,
- Block/check valves at faults,
- Block valves on upstream side of major river crossings
- Check valves on downstream side of major river crossing.

Some of the valves will be remotely operated, and will have pressure relief systems as required.

The pump stations will have communication systems and be connected to the supervisory control and surveillance system. Fire detection equipment will be provided. A standby pump will be included. There will be a monitoring system capable of warning of impending equipment failure.

Welders will be tested and qualified prior to welding on the mainline . All welds will be 100% x-rayed prior to installation of the pipe. All components of the line will be hydrostatically tested at 125% maximum operating pressure.

Preconstruction safety includes:

- A preconstruction plan.
- Electronic survey of the ROW to detect unrecorded pipeline, cables and other obstructions.
- Development of erosion control systems.

Operation and Maintenance

All facilities are designed for unattended operations controlled from the main computer center in Adelanto, California. There will be daytime maintenance crews at the Cajon Terminal and Adelanto Pump Station. Staff at Adelanto will include a safety agency liaison. There will be training for all staff consisting of: equipment operations, pipeline hydraulics, emergency response, and safety. Periodic updates to instructions will be made available.

There will be devices to lock out and shut down equipment when operations deviate from an acceptable range. Lockouts require manual restart where shutdowns can be restarted remotely and automatically. In addition, there will be alarms when equipment changes or failures occur or when there are deviations in process variables beyond the acceptable range. Alarms will also sound when a leak has been detected, when there is a power failure, and when there is a local/remote transfer of control. Alarms noting a leak will require the pipeline operator in Adelanto to evaluate the situation. Shutdown will occur automatically if there is a loss of line pressure.

The maintenance center will be equipped to handle emergency repairs. Other maintenance activities include line patrol for any construction activity by others on or near the ROW, inspection of pipeline crossings of rivers and transportation corridors, inspection and maintenance of the cathodic protection system, and maintaining the ROW. In addition there will be aerial reconnaissance of the pipeline at least once per week.

There will be daily, weekly, and annual inspections of various facilities. Daily inspections include the pumps and a visual walk around the Cajon terminal. Valves will be inspected monthly to insure freedom of movement. This will include greasing and inspection of the packing.

Valves to the pumps are closed automatically when the pumps are shutdown. The terminal can be isolated by closing the main terminal valve either manually or remotely. Small leaks and drips from the pumps drain into the sump tank. All sump tank contents will be returned to the pipeline.

Oil Spill Contingency Plan

A detailed oil spill contingency plan is required prior to operation of the pipeline. Methods utilized by Cajon to prevent/minimize oil spills include: the SCADA system, cathodic protection, fly-overs and updating of the contingency plan least once every three years.

The Cajon Pipeline Company has already established a spill response communications and responsibility hierarchy. The operations superintendent is the responsible individual and heads the Emergency Response Team (ERT). He is responsible for preparing for, and responding to, spills. Emergency Response Team members also include coordinators for:

- Field containment and cleanup activities,
- Safety,
- Environmental,
- Right-of-Way,
- Public Relations.

Spill response communications begin with either maintenance or control center staff notifying the operations superintendent that a leak has been discovered. The superintendent then begins a sequence of external notification beginning with the local public safety office, National Response Center, BLM (if on public lands), and the California Office of Emergency Services. Next, company response personnel and contractors are notified. Other outside parties are notified as required and response activities are initiated. The Adelanto office will have up-to-date county maps so that equipment and personnel can be advised and transported to the site as efficiently as possible.

The plan reviews the role of various federal and state agencies. It provides a preliminary assessment of various containment and cleanup techniques as a function of spill location, and soil conditions. Post cleanup monitoring, sampling, documentation, and waste disposal are addressed.

ERT members and their alternates will be trained. Training objectives include:

- Assurance that the plan is operational.

- Education of team members in communication procedures, their duties, and use of equipment.

- Update of the plan to accommodate new equipment and procedures (including modifications based on field experience).

Training will include drills. The training coordinator will stay abreast of relevant current research. All key staff will receive a copy of the plan and must submit a signed statement that they fully understand their duties.

Spill Risks

The purpose of this assessment is to describe the frequency and consequences of possible oil spills associated with the Cajon Pipeline. Quantification of these risks and impacts requires:

1. Estimates of the frequency of an accident leading to an oil spill and resultant spill magnitudes;
2. Estimates of injury and fatalities; and
3. An assessment of the adequacy of proposed oil spill countermeasures to minimize the likelihood of a severe spill, and emergency contingency plans to mitigate the impacts of a spill.

Consequences of potential spills in terms of public safety are described in the section on Public Safety below. A description of the emergency contingency plans was provided in the previous section on Compliance and Regulations.

The major assumptions that underlie the oil spill risk analysis include the following:

- Past accident frequencies and magnitude of spills can be used to predict future accident frequencies.
- Accidents are statistically independent and random and are sufficiently uncommon (especially major spills) that their probabilities may be described through a statistical relationship.

Leak Detection System and Operations

Three systems would monitor crude oil transport in the pipeline: flow rate metering, volume-balance monitoring, and hydraulic gradient analysis. If a leak were indicated, the pipeline dispatcher would be able to react immediately and initiate the proper operational and oil spill contingency plan actions. Each of the three systems is described below, followed by a discussion of their combined use to detect leaks.

1. Flow Rate Metering. Metering stations would be able to monitor the pipeline continually and detect potential losses. This would be accomplished by installing a metering system that would constantly monitor the volume and the flow rate of crude passing through the pipeline. Operations control would transmit readings from each meter station into a master computer that would compare the current flow rates with the previous flow rates and correlate the data with other metering stations. This scan would occur approximately every 15 seconds.

2. Volume-Balance Monitoring. Meters would be calibrated regularly at each terminal to ensure that the overall line volume was correct. Meters are accurate within 0.15%, and repeatable to 0.02%. This would involve checking the line balance to ensure that the same amount of crude oil entering the pipeline is being received at the terminal. This system would be capable of detecting small losses within 6 minutes.

3. Hydraulic Gradient Analysis. This system would incorporate pipeline pressure and temperature monitoring systems that would be combined to analyze changes in the hydraulic gradient along the pipeline route.

Although ranges for each of these systems have been presented, it should be noted that detection capability would improve with operating experience, making it possible to identify even smaller losses. The amount of oil lost from a pipeline leak would depend on the following factors: throughput rate, detection and verification time, pipeline pressure at the leak point, pipeline shutdown time, hole size, and pipeline drainage.

Operational actions would depend on the size and/or duration of the monitored decrease in throughput. A small decrease (0.3%) would be monitored for an additional period of time after discovery to see if the system returned to a steady state or if the decrease continued. If the variance were caused by a leak, only a small amount of oil would be lost during this time. Assuming the pipeline was operating at design capacity of 150,000 bpd, approximately 2 barrels of crude oil would be discharged for a 0.3% decrease in throughput during a 6 minute scan period. Thus, a loss of about 2 barrels might occur while identifying the leak.

It should be emphasized that metering systems can indicate variances in the range of 0.3% and less that are not leaks. These would normally be volume variances caused by temperature or pressure. Both temperature and pressure can normally be predicted and verified by the Supervisory Control and Data Acquisition System (SCADA) and its associated computer. SCADA would allow remote operation of the pipeline and would automatically scan for and receive operating data from the Cajon Terminal, Adelanto Station and the GATX and Hynes terminals. Such a small variance in throughput might require some time to verify as a leak. The volume of oil that could be lost for a leak of slightly less than 0.3% of throughput would not exceed 20 barrels per hour during leak verification, location, and the pipeline shut down. The total loss would then depend on the response time and additional oil lost by drainage after shutdown. This volume and time required for drainage to occur would depend primarily on the location of mainline valves, pipeline profile, and hole size.

Recorded losses significantly in excess of the detection limit would be treated differently by Cajon Pipeline. Verification time would be considerably less for large decreases in throughput. Not only would the pump stations record decreases in volume, but changes in the hydraulic gradient would also occur and pumps and pump station valves would automatically shut down.

Pipeline drainage could be an important factor in the total volume of a pipeline oil spill. Oil would drain from the pipeline to equalize pressures in the pipeline after shutdown. Drainage would usually be slow for small holes and the highly viscous oil proposed for the Cajon Pipeline, but could occur quickly for the worst-case situation of a major rupture. To minimize pipeline drainage, valves and check valves would be located along the pipeline route. Valve closure would be an important factor in limiting the drainage volume of an oil spill. Valve closure would interrupt flow along the hydraulic gradient, effectively limiting the amount of oil spilled.

Historical Analysis of Pipeline Spills

Available historical data for pipeline oil spills have been analyzed by various investigators[3] in terms of different variables related to the transportation of oil, and which can be related to the statistical probability of an oil spill. The variables most commonly used to describe the risk of an oil spill from pipeline operations are:

- Miles of pipeline operational per year, e.g., the probability of a pipeline spill is described in terms of the number of spills per mile of pipeline operating per year.

Where possible, specific information about the Cajon Pipeline was utilized in estimating spill frequencies (i.e. pipeline length and age).

Table 5.12.1-1 shows the cause of U.S. pipeline accidents over the 5-year period from 1984 to 1988.[4] As shown, pipeline faults, including defective pipe, incorrect operations, equipment malfunctions, and corrosion, accounted for 49 percent of the spills and 34 percent of the volume spilled. For pipeline leaks, corrosion is the largest cause of spills and is more characteristic of older pipelines. Outside damage to the pipeline is also a large source of spills (24% of incidents). A spill-size distribution for crude pipelines is shown in Table 5.12.1-2. Seventy percent of the spills are less than or equal to 50 barrels.[5]

U.S. EPA[6] reports the historical oil spill rate for pipelines as 0.5×10^{-3} spills per mile-year for lines larger than 14-inches. The reference line is buried 3 feet deep and has corrosion protection. Taking the overall rate of 0.5×10^{-3} spills per mile-year and subdividing it into spills of greater than or less than 50 barrels yields the following rates:[7]

- less than or equal to 50 barrels = 3.5×10^{-4} spills per mile-year;

- equal to or greater than 50 barrels = 1.5×10^{-4} spills per mile-year.

Applying the above spill rates to the Cajon proposed line of approximately 142 miles, and estimating the average spill size from the same EPA data, the following predictions can be made:

- Spills of less than or equal to 50 barrels will occur twice during the lifetime of the pipeline. The average loss will be approximately 9.3 barrels per spill;

- Spills equal to or greater than 50 barrels will occur once during the lifetime of the pipeline. The average loss will be approximately 1,000 barrels.

TABLE 5.12.1-1
Pipeline Accident Data

CAUSE	INCIDENTS		INJURIES		FATALITIES		BARRELS LOST	
	No.	%	No.	%	No.	%	No.	%
Corrosion	276	27	3	2.9	1	12.5	184	13.6
Defective Pipe/Weld	82	8	3	2.9	0	0	127	9.4
Incorrect Operation	64	6.3	7	6.7	0	0	69	5.1
Equipment Malfunction	74	7.3	19	18.3	0	0	91	6.7
Outside Damage	243	23.8	59	56.7	3	37.5	515	27.1
Other	281	27.5	13	12.5	4	50.0	367	38.1
TOTAL	1020	100	104	100	8	100	1353	100

Note: Data applies to liquid pipelines only. Period: 1984-1988.

Source: U.S. DOT, 1990.

TABLE 5.12.1-2
Land Crude Pipeline Spill Size Distributions

SPILL MAGNITUDE (barrels)	PERCENT OF TOTAL NUMBER
<50	70
50-100	8
101-500	13
501-1000	4
1001-5000	3
>5000	3
TOTAL	101

Note: Includes only spills between 1971 and 1975.

Source: EPA, 1982, Figure 23.

The maximum size spill for the Cajon proposal would be equal to the amount of oil in the longest segment of the pipeline between check valves plus oil lost during SCADA system detection of the leak and shutdown of the ruptured segment. The longest segment is on the north side of the San Jacinto Fault (M.P. 73). That length is approximately 6.7 miles (Table 3-1). The amount of oil in this section is 12,899 barrels, with a maximum spill size of 10,858 barrels due to the pipe gradient. Assuming twenty minutes for detection of the leak and shutdown of the system, another 2,100 barrels could be lost (at a daily flow rate of 150,000 bbls) for a total loss of approximately 12,958 barrels.

In summary, approximately three spills are predicted over the life of the project. The average spill data present a range of 9.3 barrels for two small spills and 1,000 barrels for one larger spill. The maximum spill possible is 15,000 barrels, but dependent upon location would range from 385 barrels to 15,000.

The EPA 1982 Report was also used to estimate spills as a function of pipeline age. Figure 5.12.1-1 presents a graph showing the data. A new pipeline is estimated to have a spill rate of $0.35\text{x}10^{-3}$ spills per mile-year, while a 30-year old pipeline will have a rate approximately four times this initial rate. The average of $0.5\text{x}10^{-3}$ spills per mile-year, previously cited, is approximated in year 12.

Researchers for Celeron/All American Project[8] found a historical rate of oil spills from onshore crude oil storage facilities using storage volume (barrel-years) as the predictor variable. The rate is based on the USCG PIRS data base covering the period 1973-1976. During this period, there were 176 spills reported and a cumulative total of $6.98\text{x}10^{8}$ barrel-years of oil stored. This yields an average rate of about $2.52\text{x}10^{-7}$ spills/barrel-year of storage. The rate applies to spills greater than 2.4 barrels (100 gallons) in size. A spill size frequency distribution of onshore storage facility spills was developed by Celeron/All American based on 176 incidents. The fraction of spills exceeding a specific volume is shown below (Table 5.12.1-3).

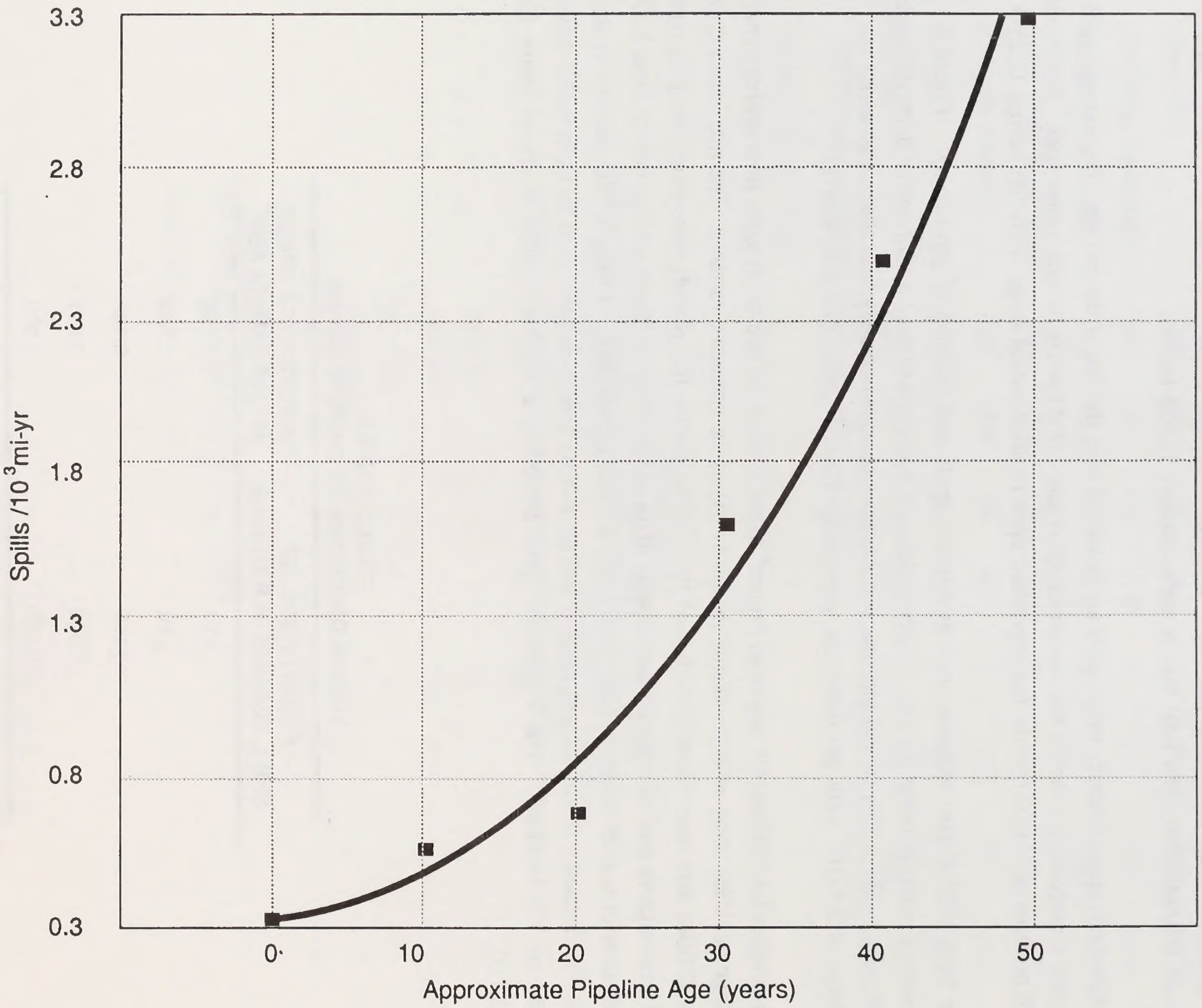
TABLE 5.12.1-3
Volume Distribution Of Onshore Storage

FACILITY SPILLS[1] SPILL VOLUME IN BARRELS	FRACTION OF SPILLS IN THIS SIZE CLASS[2]
$\leq$10	0.200
$\geq$10	0.642
$\geq$100	0.148
$\geq$1,000	0.011
$\geq$10,000	0.000

[1] Estimates based on Table IV-2 of OIW, 1978.
[2] Fractions apply to the class of spills >2.4 barrels in size.
Source: BLM, 1984

Mean Spill Size and Pipe Diameter for accidents reported to OPSO, 1971-1975

Figure 5.12.1-1



Source: EPA, 1982; Table 32.

The Cajon Pipeline project includes a tank farm at 12-Gauge Lake consisting of 5 tanks with dikes and a capacity of 750,000 barrels. Over the 30-year life of the project, estimated spills include 3.6 spills equal or greater than 10 barrels, 0.8 spills equal or greater than 100 barrels, 0.06 spills equal or greater than 1,000 barrels, and about 1.3 spills less than or equal to 10 barrels.

Numerical estimates for spills from pumping facilities were not developed. Previous studies (EPA, 1982) indicate that releases from pumping stations are about 1/25 that of line pipe and about 1/2 to 1/3 that of tank farms. Given the low volume residing in the pumping station and the comprehensive control system proposed by the Cajon Pipeline, these stations were considered to be equivalent of line pipe.

Public Safety

The viscous and relatively low volatility of the heavy crude to be transported is advantageous to public safety. If released, slow flow of the oil will preclude rapid spreading beyond the immediate spill location. The low volatile fraction of the material will reduce the chances of a flammable vapor cloud that could ignite or explode. Estimated impacts on safety are based upon:

- Statistical estimates of fatalities/injuries from historic experience with liquid pipelines.
- A qualitative discussion of potential fire and explosion scenarios for the Cajon Pipeline.

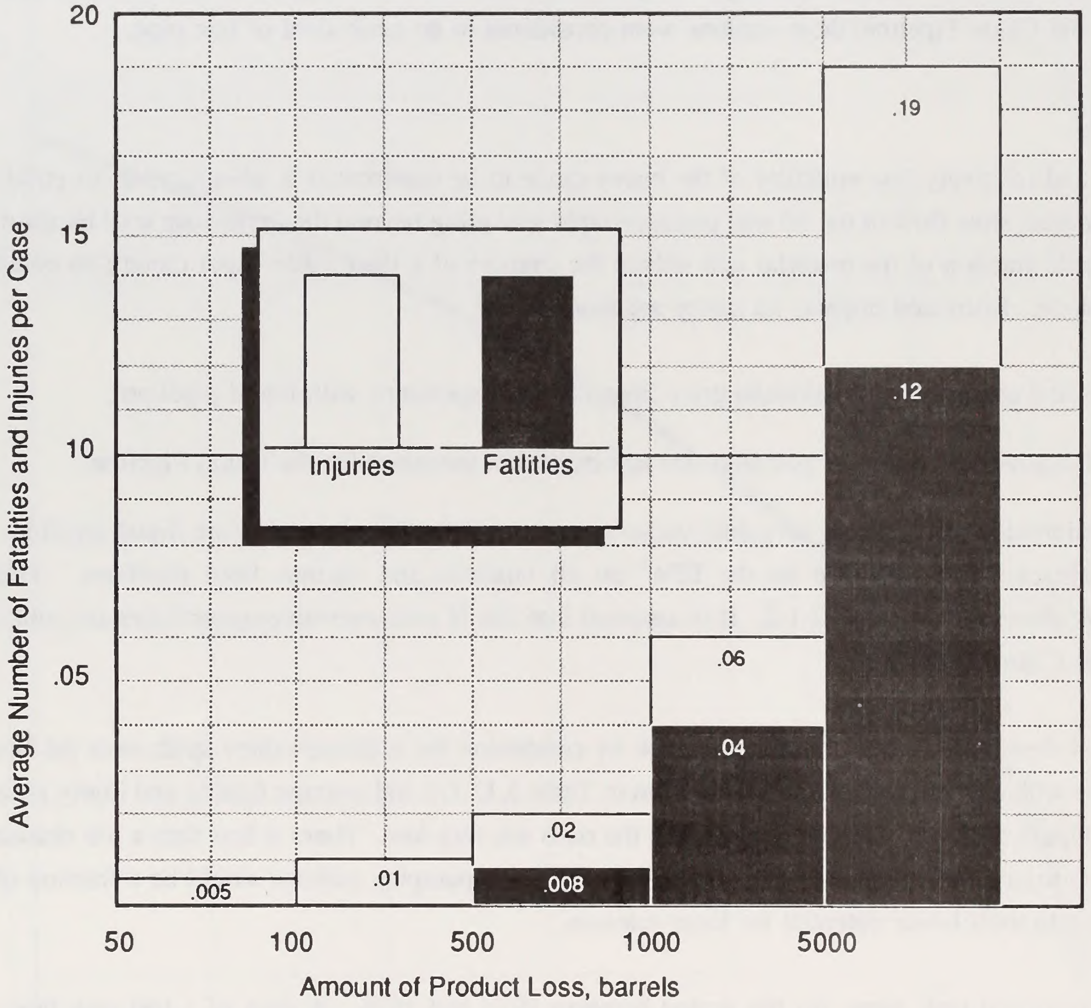
No specific information is available on public verses occupational fatalities/injuries from liquid pipelines. However statistics were developed by the EPA[9] on all fatalities and injuries from pipelines. This information is shown in Figure 5.12.1-2. It is assumed that this is a conservative upper limits on public risks from the Cajon Pipeline.

Table 5.12.1-4 develops an estimate of annual risk by combining the estimated three spills over the life of the pipeline with the spill size distribution shown in Table 5.12.1-2 and average fatality and injury rates as shown in Figure 5.12.1-2. Results indicate that the risks are very low. There is less than a 5% chance of a fatality or injury over the pipeline life. The tank farm and pumping stations would be a fraction of this figure due to their lower potential for large releases.

The BLM[10] evaluated tank farms for the period between 1972 and 1976. A total of 1,100 tank-farm-years of experience was recorded (for crude oil tank farms). Of the fires, 44% caused less than $10,000 in damage. Based on the BLM data, the probability of a tank explosion/fire is approximately 0.016 explosion/fire per tank-farm-year, and a 45% chance of a fire causing more than $1,000 in damage over the 30-year life of the project.

Fatalities and Injuries vs. Amount of Product Loss in Liquid Pipeline Systems Accidents

Figure 5.12.1-2



Source: EPA, 1982

90439

TABLE 5.12.1-4
Risks of Public Fatalities/Injuries from the Cajon Pipeline

Spill Size (bbl)	Percentage of Spills	Number of Lifetime Spills	Rates Per Spill		Total Pipeline Lifetime Effects	
			Fatalities	Injuries	Fatalities	Injuries
~0-50	70	2.1	-	-	-	-
50-100	8	0.2	-	0.005	-	0.001
100-500	13	0.4	-	0.01	-	0.004
500-1,000	4	0.1	0.008	0.02	0.0008	0.002
1,000-5,000	3	0.1	0.04	0.06	0.004	0.006
≥5,000	3	0.1	0.12	0.19	0.012	0.019
TOTAL	101	3			0.017	0.032

Total spills = 3 from frequency calculations

Typically, fires at a tank farm occur as a result of the overfilling of tanks, ignition during tank repairs, and failures during tank loading and unloading operations. In almost all cases, the fire is the result of staff negligence. If the fire reaches major proportions and fire fighting efforts are not successful in isolating the fire, it can affect neighboring tanks. The Cajon Pipeline Company plans to use a spill containment basin design that would allow the crude oil to flow away from the tanks, preventing the fire risk from being spread to other tanks. Any small fires at the proposed Cajon terminal should be quickly brought under control with minimal damage because of fire fighting capability at the terminal. The worst-case situation would be where a tank fire burns for a long period of time and the tank boils over into the diked area of adjacent tanks. However the NFPA 30 code is specifically designed to avoid this situation.

Explosions can occur inside storage tanks, usually as a result of tank cleaning operations (without prepurging), welding repairs on the tank shell, or as a result of lightening or static electricity discharge. The result would be serious damage to the tank and serious injury to staff in the proximity. Most damage from a tank farm explosion would occur from the resultant fire. The potential for major damage at the terminal would be a result of the fire following the explosion. The Cajon Pipeline would provide proper grounding of the tanks, reducing exposure to lightning and/or static electricity discharge. Staff training and supervision would prevent tank-cleaning accidents.

Fires that occur around petroleum pump installations are usually the result of piping or fitting failures, pipe flange leaks, or pump gland failure. If the fire is promptly detected, damage should be light to moderate with minimal personnel injury. This is based on the requirements of 49 CFR Part 195 which is described in the Technical Appendices.

Pipeline ruptures due to internal and external forces including seismic activity are considered in the standards and codes which govern design, materials, installation, testing, maintenance, and operations. Even so, ruptures do occur. Spill size from such events was estimated in a previous section. Information was not readily available to characterize the number of pipeline spills which may lead to fire/explosions. Qualitatively, criteria for burying the pipeline, locating it away from human activity, protecting it in high risk areas (to external forces), and providing for emergency response all act to minimize the potential and consequence of these events. Table 5.12.1-4 has presented the human health effects to all people from all causes associated with liquid pipeline systems, including fire/explosions.

Standards of Significance

Significance of impacts may be viewed by two means, the first relates to reportable quantities. The DOT requires reporting of any spills equal to or greater than 50 barrels.[11] The EPA requires reporting of spills equal to or greater than 1,000 gallons (24 barrels).[12] The second method is site and resource specific. That is, spills of the same size can have very different effects depending upon where and when the spill occurs. Consequently, the impacts of spills on various resources are discussed in the following subsection.

IMPACTS AND MITIGATION MEASURES

Environmental Protection Measures Incorporated into the Proposed Project

A number of measures have been proposed by Cajon to be incorporated into the project design or added to routine inspection and maintenance procedures to reduce the risk of line failure. A brief description of the various types of spill prevention techniques Cajon proposes to employ are provided below. Design features and planning procedures proposed by Cajon to minimize spill volume in the extent of a system failure are also discussed.

- External corrosion will be minimized by insulating the outer surface with a protective medium, preventing direct contact of the steel surface with the surrounding soil.

- Cathodic protection will be used to counteract electrical current created by corrosion where the metal surface contacts the ground.

- All welds will be radiographically inspected by a contracted licensed inspector during construction.

- The pipe coating will be tested for complete coverage during construction

- The SCADA system will be used for remote monitoring and control of the pipeline. Continuous monitoring will be conducted using computerized volumetric comparisons and pressure metering to detect leakage. The computer performs a line balance at 5 minute intervals and compares any imbalance with preset parameters. The computer also keeps track of accumulated imbalances and compares hourly and daily preset parameters to the accumulated imbalances.

In addition to Cajon's proposed environmental protection measures, the following mitigation measures will be implemented to further reduce risks and potential impacts associated with the proposed project.

Impact

5.12.1-1 **For the pipelines and pump stations it is projected that three spills would occur over the life of the project ranging from 9.3 barrels to 1,000 barrels.**

The incidence for spills or accidental release is discussed above. For pipelines and pump stations the range of oil lost over the life of the project is 9.3 to 1,000 barrels. Spills greater than 50 barrels are estimated to occur once during the life of the pipeline. Spills less than 50 barrels are estimated to occur twice during the life of the pipeline. For the oil storage tanks, the estimated loss over the 30-year life of the project includes 3.6 spills equal or greater than 10 barrels, 0.8 spills equal or greater than 100 barrels, 0.06 spills equal or greater than 1,000 barrels, and about 1.3 spills less than or equal to 10 barrels. There is a 5% chance that an injury or fatality would occur over the 30-year life of the pipeline and a 45% chance of a storage tank fire causing more than $1,000 in damage over the same period.

The area a spill would cover is site-specific, as many variables can the affect the flow of oil. Spill volume, topography, and type of surface under and near which the rupture occurs influence the direction and speed of flow. The proposed pipeline crosses numerous streams, drainage, culverts, and storm drains. In urban areas, oil flow would be generally confined to roadways. As it spreads and cools, the crude would become more viscous, slowing the rate of movement. In rural areas, oil flow would follow natural terrain contours, being absorbed by the soil as it spreads.

The pipeline route passes through approximately 40 miles of sensitive desert habitat, crosses or parallels approximately 23 streams or channels, and has been located such that it is not adjacent to any sensitive uses in urban areas. The original route passed by the Baldy Mesa Elementary School. Due to public concerns regarding safety, the pipeline route has been rerouted in the vicinity of the school so that the route is approximately 0.5 miles from the school property in all directions. (Appendix A, map Sheet 8).

Potential environmental impacts resulting from an oil spill not only include the effects of the oil itself, but also the potential impacts associated with clean up operations. The degree of the impacts is not only a function of spill contamination area, but also the environmental sensitivity of the area. Secondary impacts which would occur in the areas of soils, surface water, biological resources, air quality, visual resources, land use, socioeconomics, transportation and cultural resources are addressed in the relevant sections of Chapter 5. The impact of a large oil spill would be considered *potentially* significant.

Mitigation Measure

5.12.1-1(a) *Construction Safety Measures*

i. *Support shall be provided for underground facilities in and near the construction area during work in the trench and backfilling operations to prevent damage to such facilities during construction activities.*

ii. *Hand tools shall be used in utility-intensive areas and within 24 inches of underground structures.*

iii. *In the event of inadvertent damage to an underground facility, work shall be halted in the immediate vicinity on Cajon Pipeline during facility report.*

iv. *The Cajon Pipeline Company will notify owners of any underground electrical facilities 48 hours in advance of excavation in the vicinity of these facilities. Cajon Pipeline Company will have an electrical contractor on-call at all times during construction near the potentially affected facility to repair any circuits if required by the owner in the event they are damaged during construction. The appropriate response to hazards associated with damage to natural gas pipelines will be determined in consultation with natural gas utility operators and local fire departments. Local fire departments will be notified of the schedule of construction activities in the vicinity of natural gas lines.*

5.12.1-1(b) *Spill Prevention*

i. *The recommendations from geotechnical studies shall be implemented for proper pipeline design features in fault zones to accommodate potential ground movement.*

ii. *Internal corrosion prevention techniques shall be implemented in accordance with the requirements of the California State Fire Marshal as part of pipeline maintenance procedures. Such activities may include routinely scheduled periodic pigging of the pipeline on a frequent basis to remove pockets of accumulated fluids that contribute to internal corrosion, such as hydrogen sulfide, carbon dioxide, water and other impurities, or introducing corrosion inhibitors into the crude stream periodically in sufficient quantities to protect the entire potentially affected portion of the system, inspection of the internal surface for corrosion of any pipe removed from the pipeline for any reason, and maintenance of records of this inspection by State Fire Marshall's field engineers.*

iii. *The pipeline will be concrete coated at crossings of Cajon Wash (M.P. 72), Los Angeles River (M.P. 135.7), and San Jose Creek (M.P. 110.1 - 117.2), to help reduce the risk of oil spill effects on significant water supplies and biologically sensitive areas.*

The pipeline bored under the California Aqueduct shall be installed inside a casing pipe within DWR's right-of-way. The casing pipe and the pipeline shall be cathodically protected and dielectrically isolated from each other. In addition, the pipeline shall be dielectrically coated and sealed to the casing by the use of a ling seal or equivalent. A two-inch I.D. drain line shall be provided for at the low end of the casing pipe, sloped towards daylight, and away from the Aqueduct. A three-inch standard weight galvanized steelguard post shall be installed adjacent to each drain line. The post shall extend three feet above the ground and 18 inches below ground. The bottom of the post shall be embedded in at least one cubic foot of concrete.

The pipeline shall be either concrete coated or installed inside casing pipe adjacent to the Etiwanda Creek percolation basins. The design of the pipeline at this location shall be finalized following consultation with the San Bernardino Department of Flood Control.

5.12.1-1(c) *Minimize Spill Volume*

i. *Additional remote-controlled motor-operated valves and check valves will reduce the maximum potential spill volume along the pipeline route. Table 3-1 presents locations where valves would effectively control maximum spill potential.*

ii. *Even speed and vibration sensors will be installed at pump stations to shutdown the pipeline automatically in the event that the threshold acceleration should be exceeded.*

5.12.1-1(d) *Spill Containment and Response*

i. *Cajon shall maintain an up-to-date Oil Spill Contingency (OSC Plan) Plan specific to the Cajon Pipeline in compliance with 49 CFR 195.402 subject to the review and approval of the California State Fire Marshall. This plan shall be reviewed by the Emergency Response Review Committee. The committee shall provide recommendations to the Lead Agencies for implementation of the COM Plan. This plan shall be finalized and approved by the Lead Agencies (BLM, USFS and City of Adelanto). In addition to compliance with all requirements of 49 CFR 195.402, the California State Fire Marshall should specifically review this plan's methods and instructions for containing oil across land, down stream channels and in water. The removal of contained vegetation and methods to protect and care for birds and wildlife in the event they become soiled with oil are also important plan components to be considered in the state Fire marshall's review.*

In addition, the plan must include a list of not only the names and telephone numbers of the pre-approved response contractors, but information on the type and amount of equipment each can provide, number of laborers available and estimated time to mobilize the response team. A listing of names, numbers and addressed must be provided for emergency access to private lands along the pipeline route. Areas of particular biological sensitivity must be noted *and special clean-up techniques outlines should these areas be contaminated. Additionally, areas of archaeological or paleontological significance within the potentially affected spill area that are discovered during the lifetime of the project must be noted in the Oil Spill Contingency Plan. Special clean-up techniques, such as not operating bulldozers, in these areas may be required to reduce impacts on these resources and must be described in the Oil Spill Contingency Plan. Provisions to rehabilitate the habitat affected by the spill and/or by clean-up activities must also be included in the plan. A monitoring program must be established to assess the rate and overall success of the clean-up and reclamation efforts.*

ii. *Copies of the approved Oil Spill Contingency Plan must be distributed to all agencies crossed by the pipeline route and local fire departments who may be called on for emergency response. Copies of all updates must be provided.*

iii. *Appropriate containment and cleanup measures addressing storm drain and flood control channels will also be addressed in the Oil Spill Contingency Plan.*

iv. *Procedures to be followed shall be provided to local fire and police officials and Forest Service and BLM personnel, as they would generally be the first response personnel on-scene in the event of a spill*

v. *Oil spill containment and response equipment shall be supplied and maintained at locations accessible to first response personnel along the route to facilitate rapid response to an oil spill.*

vi. *A public education program shall be conducted consistent with 49 CFR 195.440 under the supervision of the California State Fire Marshall to help the public and agencies understand pipeline safety hazards. This program will include distribution of a brochure explaining how to recognize a leak, what to do in the event of a spill and who to call. The brochure will be available to homeowners and residents along the pipeline route, and will be actively distributed by Cajon Pipeline Company along with construction notifications during the installation of the proposed pipeline.*

vii. *On-site drainage and collection systems along the route shall include curb construction on the downstream side of Old Cajon Boulevard (M.P. 72) to retain oil and provide additional time for emergency response personnel to arrive and implement response efforts prior to contamination of adjacent waters.*

The oil spill contingency plan has been referenced as mitigation throughout this document. The following issues need to be addressed in the plan and each issue is cross-referenced to the mitigation measure proposed;

- Include site specific emergency plans for rupture of the pipeline at fault crossings (5.1.1-1(d))
- Include procedures for removal of contaminated soils, containment procedures in areas of high groundwaters and revegetation and restoration of damaged areas. Revegetation and restoration would be in accordance with the Erosion and Sedimentation Control Plan (5.1.1-6)
- Include procedures for oil spill cleanup at river crossings (5.3.1-11(b)(c))
- Revegetation of spill zones within river areas (5.6.1-6(a))

5.12.2 KRAMER SEGMENT ALTERNATIVE

The Kramer Segment Alternative would have the same spill risk as calculated in Section 5.12.1.

5.12.3 SYCAMORE SOUTH SEGMENT ALTERNATIVE

The Sycamore South Segment Alternative would have the same spill risk as calculated in Section 5.12.1.

5.12.4 M-70 PIPELINE

The information in this section is summarized from the Draft Environmental Impact Report/Statement on the proposed M-70 Pipeline replacement and optimization project. The historical system safety and reliability data used in the M-70 Pipeline assessment is comparable to that used for the proposed action. Thus, the results are comparable.

Compliance and Regulations

The major standards and codes associated with the construction and operation of crude oil pipelines and storage tanks are addressed in Section 5.12.1.

Review of Recent M-70 Pipeline Performance

Mobil has experienced several spill incidents on the M-70 Pipeline in recent years. In April of 1986, approximately 670 barrels spilled on Woodley Avenue in Granada Hills. The cause was attributed to corrosion. Two months later, in June of 1986, a 10-inch diameter segment failed on Prairie Avenue in Torrance resulting in a spill of 150 barrels. Another spill was reported in June of 1987 when 2500 barrels were lost along Lebec Road in Lebec due to a corrosion induced failure (OPS, 1990). The largest of the recent spills occurred on September 10, 1988 on Woodley Avenue and Ventura Boulevard in Encino. Approximately 3155 barrels spilled from what was later determined as galvanic corrosion due to the pipeline's close proximity to a water main. During a hydrostatic pressure test on September 27, 1988, the M-70 Pipeline ruptured again on Sherman Oaks Avenue in Sherman Oaks. More recently, on May 8, 1990, a 12-inch segment of pipe failed as a result of external corrosion at the Valencia Golf Course spilling approximately 240 barrels. The M-70 Pipeline failed again during hydrostatic testing on June 23,

1990. This spill occurred near Gerald Avenue and Midwood Drive in Granada Hills. Approximately 1600 barrels of test water and residual crude spilled, flowing into storm drains leading to Bull Creek. Hydrostatic testing is a method of detecting weakness in the pipeline by filling the line with water, then running it through at pressures 10 to 50 percent greater than normal operating conditions so that faults can be detected and repaired. Each incident during testing procedures spilled primarily red dye test water, containing less than 1 percent of crude oil. In addition, three other minor incidents have occurred in 1990, each resulting in spills of 25 barrels or less.

This uncharacteristically high number of problems on the M-70 line caused Mobil to examine the system. The project is a result of this effort.

Spill Risk

Estimating the potential risk for the present M-70 Pipeline is particularly difficult because of its composite nature. There are 42 size changes in the line and segments range in age from 2 to 55 years old. The derived failure rate was applied to each segment of the system and corrected according to the age, size and length of that particular segment. The net result is a statistically expected value of 0.089 spills per pipeline year. If this were a "typical" 16-inch crude oil pipeline in the U.S., the probability of one or more spills occurring in the upcoming year would be 8.5 percent. However, actual spill occurrence on the Mobil M-70 system has been considerably more frequent than the calculated value for a "typical" crude oil pipeline in the U.S. Since mid-1985, Mobil has experienced 6 spills on their M-70 line, for an observed failure rate of 1.2 spills per pipeline year. Using this observed rate, the cumulative probability of one or more spills occurring over the next 5 years is 99.8 percent.

Drainage volumes were calculated for each "worst case" spill location, or the point of lowest elevation on the segment. A maximum volume of 15,120 barrels could potentially spill from the line assuming a clean and complete break just north of the Castaic Junction valve at approximately M.P. 40.0. This point represents the worst case rupture location for the entire existing line, as approximately 14 miles of 10 and 16-inch pipe could drain crude oil from south of Whitaker Summit into the Santa Clarita area.

Leak Detection and Spill Response

Mobil's current leak detection system, the Supervisory Control and Data Acquisition System (SCADA), includes volumetric meters and pressure sensors. Meters are located on the M-70 system at the Lebec and Newhall Stations and also at the Torrance refinery, monitoring flow volumes between these points. Upon recognition of a spill on their line, Mobil would isolate the problem segment by closing the mainline block valves via remote operation from the Dallas Dispatching Center. Mobil estimated that it would take 15 to 20 minutes to stop the flow of oil should the rupture occur north of Newhall Station and less time if the problem was to occur south of Newhall. The volumes presented in Table 3.2.10-2 assume continued flow for 23 minutes after the initial rupture for that portion of the pipeline north of Lebec, representing the time for the detection system to recognize the problem (3 minutes) plus the time to stop the flow of oil to the segment (20 minutes). A shorter response time of 18 minutes was assumed for a spill south of the Newhall station.

Oil Spill Risk for the Proposed Pipeline

The following section presents a quantified risk estimate based on historical pipeline failure rates, corrected for characteristics of the proposed pipeline. After the pipeline has been fully installed, tested, and engaged in operation, there is a 2.2 percent per year probability of an oil spill occurring within the first 5 years of operation. This represents an improvement over the 8.5 percent chance of a spill on the existing system. The principal difference in the calculated percentages is due to age. The improved cathodic protection and increased wall thickness are expected to also reduce the risk. However, available data did not allow the magnitude of this reduction to be quantified. By reducing the potential for an oil spill, the proposed project would result in a significant improvement over the existing system.

The risk of an oil spill was also calculated over a 50 year period. The annual and cumulative probabilities of one or more spills occurring within 5 years of the project life, 10 years, and so on are shown below.

Pipeline Age (yrs)	Annual Probability of 1 or more spills (%)	Cumulative Probability of 1 or more spills (%)
0-5	2.2	10.5
5-10	4.4	31.3
10-20	5.3	58.1
20-30	12.4	83.9
30-40	19.4	96.9
40-50	24.7	99.7

For comparison, the probability of one or more spills exceeds 99 percent after a 50-year time period for the proposed project. The probability of one or more spills exceeds 99 percent after a 5-year time period for the existing M-70 pipeline.

A maximum spill size of 11,500 barrels could result if a rupture were to occur on Peace Valley Road, north of the proposed Hungry Valley valve location. A rupture on 9 of the 12 segments could potentially result in spillage of substantially greater volume of crude with operation of the proposed system. The increase in volumes could be as much as 4,700 barrels for those portions of the pipeline between Slauson Station and Torrance and Tejon Summit to Hungry Valley. Increased potential spill volume is considered a significant adverse impact of the project. Mitigation measures are recommended to reduce possible spill sizes on each segment.

5.12.5 PACIFIC PIPELINE

The new pipeline portions of the Pacific Pipeline project (158.5 of 170 miles) would be made from 20-inch diameter, 0.312-inch minimum wall thickness, steel pipe. The remaining 11.5 miles would use an existing 22-inch pipeline. The pipe would be protectively coated and insulated at the factory to resist corrosion and heat loss. Joints, weld area, and repair spots would likewise have coating, insulation, and outer wrap field-applied prior to placement.

The entire pipeline would be protected by a cathodic-protection system, with the individual elements of this system (i.e., groundbeds and rectifiers) installed based on tests of pipe-to-soil electrical potential and soil resistivity after construction. All pipeline welds would be radiographically inspected before installation. The entire pipeline would be hydrostatically pressure tested to 1.25 times the maximum design operating pressure before operation.

Block valves would be installed at 43 automated control points along the pipeline, providing an average spacing between block valves of about 4 miles. The longest unvalved interval is approximately 7 miles (in Ventura County near Santa Paula). Twenty-nine check valves would be installed at strategic locations on the downstream side of sensitive stream and river crossings and at certain fault crossings to prevent backflow of oil in the pipeline in the event of a leak at the crossing.

For operation of the pipeline system, a Supervisory Control and Data Acquisition (SCADA) system would be used, providing alarm, status, and control functions. The SCADA system master station would originate remote control commands and would receive status data and alarms from remote terminal units (RTUs) located along the pipeline system.

Leak detection would be both by overall system pressure monitoring and by the volume balance method using meters at the Gaviota and Las Flores stations and at the points of delivery in the Los Angeles area. The state-of-the-art leak detection systems (pressure variation and volume balance) are designed to detect a 200 barrels per hour (bbl/hr) release in 3 minutes and a 3 bbl/hr release in 12 hours.

Expected Number of Spills

Based on the spill statistics derived above, the proposed 170-mile pipeline may be expected to experience the following number of spills:

LEAKS

5.4×10^{-4} leaks/mile/year x 158.5 miles = 0.0856 leaks/year
1.35×10^{-3} leaks/mile/year x 11.5 miles = $\underline{0.0155}$ leaks/year
Total leaks/year = 0.101

or two leaks for the proposed project for the 20 year operating life.

RUPTURES

2.7×10^{-4} ruptures/mile/year x 158.5 miles = 0.043 ruptures/year

6.9×10^{-4} ruptures/mile/year x 11.5 miles = 0.008 ruptures/year

Total ruptures/year = 0.051

or one rupture for the proposed project for the 20-year operating life.

In summary the proposed pipeline may be expected to experience two leaks and one rupture, from all causes combined, during its 20-year operating lifetime. These estimates are based on historic pipeline operations experience and leaks or ruptures may occur more frequently or may not occur at all.

Estimated Spill Volume

Drainage volumes were calculated for each worst-case spill location, or the point of lowest elevation on the segment. Initial pre-shutdown spill volumes were calculated based on maximum throughput, alarm activation times, and response time to close valves and isolate the leak. This initial spillage, added to the drain volumes, represents maximum potential spill volume along each segment of the pipeline system as shown in previously referenced Table 3.14-4. A maximum volume of 12,663 barrels could potentially spill from the line at an inland location, assuming a clean and complete break above the block near the Keith Pump Station, approximately M.P. 81.75. This point represents the worst-case rupture location for the entire line, since approximately 6.25 miles of 20-inch pipe could drain crude oil. The maximum worst case at the coastal area would occur with a rupture near Dulah before the block valve at approximately M.P. 53, which could drain crude oil. The maximum spill size from a rupture ranges from 707 to 12,663 barrels.

5.12.6 FOUR CORNERS LINE 90 PIPELINE

Little information is available on the Four Corners Line 90 Pipeline and its vulnerability to spills. The proponent's Environmental Assessment for the Pacific Pipeline indicates that the Four Corners Pipeline would be subject to five times as many leaks and ruptures as the Pacific Pipeline primarily because of its age. Based on this information, it would also be subject to five times as many leaks and ruptures as the Cajon Pipeline.

5.12.7 NO PROJECT

Under the No Project Alternative, crude oil would be delivered to the Los Angeles refineries by marine tankers. As shown in Table 1-1, marine tankers are subject to spills approximately 20 times as frequently as pipelines.

ENDNOTES

1. BLM, 1985.
2. BLM, 1984.
3. Cajon, 1991.
4. EPA 1982, BLM 1984, BLM 1985, DOT 1990.
5. DOT, 1990.
6. EPA, 1982.
7. EPA, 1982.
8. BLM, 1984.
9. EPA, 1982.
10. BLM, 1985.
11. 40 CFR, 1986.
12. 40 CFR, 1985.

5.13 CUMULATIVE IMPACTS

As defined in CEQA Guidelines, Section 15355:

> *"Cumulative impacts: refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts..... Cumulative impacts can result from individually minor, but collectively significant, projects taking place over a period of time."*

Further the Council of Environmental Quality's regulations for implementing NEPA define cumulative impacts as:

> *"The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions ......"*

The impacts of construction and operation of the Cajon Pipeline would add an additional small increment to the overall environmental impact of development in the Los Angeles Basin. The Los Angeles Basin already has a network of pipelines, refineries and other facilities designed to meet the region's need for petroleum products. As demand, supply sources and regulations change additional similar facilities will be needed. The overall cumulative impact on the environment can be expected to increase. On the other hand, to the extent that pipeline transport of crude oil and petroleum products replaces tanker truck, train or marine transport then there may be some reduction in cumulative impacts.

The projects presented in Table 3-3 as well as general future development trends analyzed in the South Coast Air Basin Air Quality Management Plan, along with the proposed Cajon Pipeline were analyzed for cumulative impacts. The currently identified projects with which the proposed pipeline project could be expected to produce cumulative effects are related to transportation and residential/commercial development. Construction of these projects is anticipated to occur between 1993 and 1994, when pipeline construction is underway. Impacts to the various areas are discussed below.

DESERT SEGMENT

Geology, Soils and Seismicity

There are few large projects proposed for the desert region. These projects would result in surface grading, with minor to moderate alterations of the terrain. No significant impacts are anticipated due to impacts to geologic conditions. The Cajon Pipeline project would present a negligible contribution to cumulative effects on earth resources.

Onshore Water Resources

Implementation of the cumulative projects may result in an increase of surface runoff from impervious areas, and a deterioration of water quality from erosion of graded areas and introduction of urban contaminants. The Cajon Pipeline would not increase impervious areas as the ground surface would not be sealed in any way, apart from construction at Cajon Terminal and the Adelanto pumping station. These areas present a minor percentage of total developed acreage. Grading practices would be strictly followed to limit sediment transported from the construction right-of-way. This would ensure that the project does not contribute to cumulative water quality impacts.

Biological Resources

Development within the desert portions of the route will result in a significant loss of desert vegetation and significant impact to sensitive species (desert tortoise). At present, few projects are planned or anticipated within the desert areas. However, as discussed in Section 5.3 the ongoing regional increase in human disturbance of habitat and species due to development and construction is cumulatively significant.

Air Quality

The Southeast Desert Air Basin currently does not violate current air quality standards. Cumulative development in the region would contribute particulates from grading and fugitive emissions from the pipeline facilities. The proposed project is not expected to be a significant contribution to cumulative air quality impacts in the SDAB.

Noise

Due to the separation of projects in the desert regions, project construction would not add to a cumulative impact in noise. Operation of the pipeline would not have a cumulative noise impact with other projects.

Visual Resources

During construction, the Cajon Pipeline project could have cumulative visual impact with other developments proposed to be constructed along the U.S. 395. This is temporary as the construction spreads are moving and are not stationary. During operation, the pipeline is entirely below ground and would not contribute to any cumulative long term visual impact. Following construction revegetation mitigation measures would be recommended.

Land Use

The Cajon Pipeline project would result in the conversion of a total of 25 acres from open space to industrial use and 2.2 acres of presently undeveloped land within an urban area to industrial uses. At present, few projects are planned or anticipated within the desert or Adelanto areas. This cumulative impact is therefore not considered significant.

Utilities

The Cajon Pipeline project would be constructed in a utility corridor designated by the BLM which presently carries transmission lines, pipeline, and underground cables. The Cajon Pipeline in conjunction with the projects proposed for the utility corridor parallel to U.S. 395 would not consume the extent of the corridor and would not result in significant cumulative collocation problems.

Socioeconomic

Tables 5.9.1-2, 5.9.1-3 and 5.9.1-4 above summarize the cumulative employment, population and housing changes anticipated by the Southern California Association of Governments (SCAG) between 1987 and 2010 for the study areas. SCAG prepared an environmental impact report on the population, employment and housing impacts associated with these projections in connection with its 1989 Growth Management Plan. The findings are summarized in Chapter VIII of the SCAG Growth Management Plan (February 1989) and found that all of the impacts could be mitigated to less than significant levels.

Transportation and Circulation

At present, no transportation projects have been identified in the desert regions that would add to a cumulative impact to transportation and circulation.

Cultural and Paleontological Resources

Impacts to cultural resources from individual development must be fully mitigated to secure project approval. Therefore, cumulative impacts of individual developments on cultural resources are not expected to be significant.

MOUNTAIN SEGMENT

Geology, Soils and Seismicity

No projects are known in the mountain region which would contribute to a cumulative impact to geological resources.

Onshore Water Resources

Cumulative impacts to water resources may result in an increase of surface runoff from impervious areas, and a deterioration of water quality from erosion of graded areas and introduction of urban contaminants. The Cajon Pipeline would not increase impervious areas as the ground surface would not be sealed in any way in the mountain regions. Grading practices would be strictly followed to limit sediment transported from the construction right-of-way. This would ensure that the project does not contribute to cumulative water quality impacts.

Biological Resources

The Cajon Pipeline project is located within a designated Forest Service utility corridor. From Baldy Mesa south to SR-158, past projects have contributed to a loss of vegetation and impacts to wildlife of the area through loss of habitat. This cumulative impact is considered significant.

Air Quality

The proposed project is not expected to be a significant contribution to cumulative air quality impacts in the SDAB and SCAB.

Noise

There are no major projects which would add to cumulative noise impacts in the mountain regions. Operation of the pipeline would not have cumulative noise impacts with other projects.

Visual Resources

The Cajon Pipeline project is located within a designated Forest Service utility corridor. From Baldy Mesa south to SR-158, past projects have contributed to a loss of vegetation which has resulted in significant cumulative visual impacts on the CalNev slope. A comprehensive revegetation plan would be incorporated into the COM plan for the pipeline to reduce any visual impacts to a less-than-significant level. During operation, the pipeline is entirely below ground and would not contribute to any cumulative visual impacts.

Land Use

At present few projects are planned or anticipated adjacent to the pipeline in the mountain region. This cumulative impact is therefore not considered significant.

Utilities

No projects are anticipated for construction within Cajon Pass. However, the fact that the pass is a corridor for about 30 major utilities means that the Cajon Pipeline in conjunction with cumulative projects would have a cumulative impact for collocation danger. The impacts of the pipeline itself are discussed in Section 5.8, Utilities.

Socioeconomic

Tables 5.9.1-2, 5.9.1-3 and 5.9.1-4 above summarize the cumulative employment, population and housing changes anticipated by the Southern California Association of Governments (SCAG) between 1987 and 2010 for the study areas. SCAG prepared an environmental impact report on the population, employment and housing impacts associated with these projections in connection with its 1989 Growth Management

Plan. The findings are summarized in Chapter VIII of the SCAG Growth Management Plan (February 1989) and found that all of the impacts could be mitigated to less than significant levels.

Transportation and Circulation

The proposed pipeline is located entirely within the designated utility corridor throughout the mountain region, therefore no cumulative transportation impacts are anticipated.

Cultural and Paleontological Resources

Impacts to cultural resources from individual development must be fully mitigated to secure project approval. Therefore, the cumulative impacts of individual developments on cultural resources are not expected to be significant.

URBAN SEGMENT

Geology, Soils and Seismicity

The majority of the cumulative projects are proposed for the urban areas of the Los Angeles Basin or San Bernardino County. These projects would result in surface grading, with minor to moderate alterations of the terrain. No significant impacts are anticipated due to impacts to geologic conditions. The Cajon Pipeline project would present a negligible contribution to cumulative effects on earth resources.

Onshore Water Resources

Implementation of the cumulative projects may result in an increase of surface runoff from impervious areas, and a deterioration of water quality from erosion of graded areas and introduction of urban contaminants. The Cajon Pipeline would not increase impervious areas as the ground surface would not be sealed in any way. Grading practices and trenching would be strictly followed to limit sediment transported from the construction right-of-way. This would ensure that the project does not contribute to cumulative water quality impacts. In addition, the potential risk factors at water crossings and along flood control channels can be reduced to a less than significant level through the implementation of the mitigation measures proposed herein.

Biological Resources

Development within the urban portions of the route will result in minor losses of vegetation, but no significant impacts to sensitive species have been located in the adjacent areas of the pipeline route. This cumulative impact is therefore not considered significant.

Air Quality

The SCAB has serious problems with meeting air quality standards for ozone and carbon monoxide. Cumulative development in the region would contribute to continuing exceedances of air quality standards. During construction, the Cajon Pipeline project would represent a short-term contribution to air quality problems with the SCAB. However, numerous emission controls and mitigation measures have been identified to minimize the impact of this cumulative contribution. During operations, the project would make minor contributions to emissions of ROC due to fugitive losses. The proposed project is not expected to be a significant contribution to cumulative air quality impacts in the SDAB and SCAB.

Noise

Dependent upon project phasing, construction noise of this project may be cumulatively significant for residents within Rancho Cucamonga when combined with construction on Foothill Boulevard. However, this impact can be mitigated by scheduling pipeline construction to occur before or after construction of other projects in the same area. Operation of the pipeline would not have cumulative noise impacts with other projects.

Visual Resources

During construction, the Cajon Pipeline project could have cumulative visual impacts with other developments being constructed in the same area. This is temporary, as the construction spreads are moving and are not stationary. During operation, the pipeline is entirely below ground and would not contribute to any cumulative visual impacts.

Land Use

As stated above the proposal could directly or indirectly effect numerous proposed land uses along the route. The impacts could be direct, physical impacts or indirect long-term impacts related to system safety. These impacts are considered less than significant.

Utilities

The cumulative impacts of the Cajon Pipeline to other utilities are related to the collocation issues. Cajon Pipeline adds one more utility to the urban infrastructure. Although system safety issues address collocation, the addition of utilities can increase the potential for impacts on health and safety. This issue with mitigation as proposed is less than significant.

Socioeconomic

Tables 5.9.1-2, 5.9.1-3 and 5.9.1-4 above summarize the cumulative employment, population and housing changes anticipated by the Southern California Association of Governments (SCAG) between 1987 and 2010 for the study areas. SCAG prepared an environmental impact report on the population, employment and housing impacts associated with these projections in connection with its 1989 Growth Management

Plan. The findings are summarized in Chapter VIII of the SCAG Growth Management Plan (February 1989) and found that all of the impacts could be mitigated to less than significant levels.

Transportation and Circulation

Numerous transportation projects have been proposed to improve the operation of existing facilities and to construct new travel corridors. These projects are in various stages of planning and development, but most are not expected to be constructed until 1993 to 1994. Others will be constructed when funding becomes available. If simultaneous construction of these facilities occurs with pipeline construction, significant impacts to traffic flow, access, and parking may occur. Scheduling of pipeline construction to occur before construction of other projects within the same corridor would eliminate the need for re-paving and reduce the constriction within the road system.

Cultural and Paleontological Resources

Impacts to cultural resources from individual development must be fully mitigated to secure project approval. Therefore, cumulative impacts of individual developments on cultural resources are not expected to be significant.

6.0

Analysis of Marketing Alternatives

6. ANALYSIS OF MARKETING ALTERNATIVES

6.1 INTRODUCTION

The objective of the proposed Cajon Pipeline is to transport up to 180,000 BPD of crude oil from the Santa Barbara Channel and the San Joaquin Valley to refineries in the Los Angeles Basin. This objective could be attained in a number of different ways which are discussed in Chapter 3 of this EIS/EIR. Chapters 4 and 5 of this report include a description of the environmental setting, and potential impacts of the following alternatives:

- M-70 Pipeline
- Pacific Pipeline
- Four Corners Line 90

In this chapter the environmental impacts of the marketing alternatives are compared and each environmental element is discussed separately.

6.2 COMPARISON OF MARKET ALTERNATIVES

6.2.1 Geology

Geologic hazards that could affect the structural integrity of the alternatives and cause a spill of crude oil are the primary concern. All transportation modes would exist in a seismically-active and landslide-prone region of California. All four pipelines would have to cross active faults, which are defined as faults that have exhibited movement within the last 11,000 years. The potential effects of displacements on faults on the three proposed pipelines could be mitigated by incorporating design features that can accommodate some movement. Spills from an earthquake-induced pipeline failure would be limited by valving in the line and continuously-monitored leak detection systems. The potential effects of the geologic hazards could also be greatly reduced by the incorporation of appropriate design features. Because the Four Corners Line 90 alternative would utilize 185 miles of existing pipeline, it would incorporate fewer features designed to minimize geologic hazards.

In conclusion, no alternative offers a significant advantage over any other with respect to geologic impacts or invulnerability to geologic hazard. All alternatives involve some potential impacts but they are already modest or can be mitigated to a level of insignificance.

6.2.2 Onshore Water Resources

Onshore water resources could be adversely affected by construction of the alternatives. Long-term effects on water resources are limited to those associated with spills. Because the adverse effects of spills primarily affect biological resources they are discussed in the next section.

Construction of the M-70, Pacific and Cajon pipelines could temporarily affect water quality and hydrology because all must pass under or over a number of natural waterways. All crossings that disturb the bed of the waterway would be the subject of Stream Alteration Agreements with the Department of Fish and Game. The agreements would include measures designed to minimize impacts on water quality such as limiting construction to dry periods, requiring revegetation and requiring erosion control.

The Four Corners Line 90 reversal alternative would involve major construction at the pump stations and heater sites. This alternative would not be expected to have a significant adverse effect on water resources, unless mainline pipe maintenance, repair, lowering or pipe replacement is required.

6.2.3 Biological Resources

Construction of the M-70, Four Corners Line 90 reversal alternative, Pacific and Cajon pipelines would temporarily disrupt biological resources. Construction of the Four Corners Line 90 would have some effect on biological resources. Sensitive habitats that could not be avoided such as wetland and riparian vegetation in the vicinity of waterways, would be restored or compensated for. The effects on sensitive species such as the desert tortoise and Mojave ground squirrel would be reduced to insignificant by mitigation.

All alternatives would pose a threat to biological resources in the event of an oil spill. The potential for environmental damage would be greatest where pipelines, railroads or highways cross waterways. This is because the most sensitive habitats are often located at or near waterways and because spilled oil could be spread rapidly by surface waters. Of the four pipelines evaluated in this EIS/EIR the Pacific Pipeline has the most potential for harming biological resources in the event of a spill because of its close proximity to the ocean, and because it crosses 157 watercourses at or near their estuaries.

6.2.5 Air Quality

Operation of the majority of pipeline alternatives would result in few air pollutant emissions. Emissions would be limited to fugitive emissions from tanks and valves, and to emissions from heaters. Construction of the pipeline alternatives would also produce air pollutant emissions for the period of construction. The M-70, Cajon and Pacific pipeline alternatives would generate the most air pollutant emissions during construction due to pipeline length. However, for operation, the Four Corners Pipeline would result in the greatest emissions from newly constructed heater stations.

6.2.6 Noise

None of the pipeline alternatives would generate significant noise or adversely affect any sensitive receptors as a result of pipeline operations. Noise from construction would be associated with all alternatives although it would be greatest for the M-70, Cajon and Pacific pipelines. While largely unavoidable, construction noise was judged to be insignificant because of its temporary nature.

6.2.7 Visual Resources

Once built, the pipeline alternatives would offer little visual evidence of their existence except at the pump stations and other associated facilities. For the most part the alternatives follow existing rights-of-way which have already been subject to disturbance. In undeveloped areas, ground disturbed as a result of construction would be regraded and revegetated so that it would gradually return to its original appearance. Impacts would be the greatest in steep sloping areas where the pipeline right-of-way can be seen from distant vantage points. The Cajon Pipeline would pass through the visually sensitive Cajon Pass area in the San Bernardino National Forest. The M-70 Pipeline would pass through the Pyramid Lake area in the Angeles National Forest. The Pacific Pipeline would have the least visual impact because, although it passes through visually sensitive areas, it would lie within an already developed railroad right-of-way.

6.2.8 Land Use

The Cajon, M-70 and Pacific pipeline alternatives would involve the conversion of narrow strips of land from various existing uses to use for crude oil transport. In many cases the land involved is already used as right-of-way for highways, streets, railroads and utilities. Pump stations and storage areas would also involve conversion of land uses. In general, none of the alternatives would have significant impacts on land use.

6.2.9 Utilities

Pipeline construction for Cajon, M-70, and Pacific pipelines would result in similar construction impacts to utilities and potential utility disruption. Construction impacts of Four Corners Pipeline would be limited to new facilities locations. The collocation danger for the Cajon and M-70 Pipeline would be similar with a concentration of utilities in a restricted geographical area.

6.2.10 Socioeconomics

All alternatives would create small numbers of permanent jobs. The Cajon, M-70 and Pacific pipelines alternatives would generate several hundred short-term construction jobs. None of the alternatives would have significant socioeconomic impacts.

6.2.11 Transportation and Circulation

The construction process for the three pipeline alternatives would temporarily disrupt traffic. Because construction would proceed rapidly, and major highway crossings would be built by boring under the highways, the impacts on traffic were judged to be less than significant after mitigation. Four Corners Line 90 Pipeline with construction limited to several locations would have insignificant impacts on traffic.

6.2.12 Cultural Resources

The three alternatives involving pipeline construction could all adversely affect cultural resources. It is expected, however, that the effects would either be insignificant, could be mitigated to a level of insignificance, or in cases of important finds, could be avoided.

6.2.13 System Safety and Reliability

Spill risk for pipelines depends on the length and age of the pipeline, pipe material, standard of construction and many other factors. Because the Cajon, M-70 and Pacific pipelines would be new, they would all experience about the same spill risk per mile. Spill risk per mile for the existing Four Corners Line 90 would be about five times that for a new pipeline. Overall spill risk for the Pacific Pipeline would be greater than for the M-70 and Cajon pipelines because the total transport distance is longer.

6.3 ENVIRONMENTALLY SUPERIOR ALTERNATIVE (CEQA)

The CEQA process requires the identification and assessment of reasonable alternatives that have the potential for avoiding or minimizing the impacts of the proposed project. A comparative analysis of technically feasible alternatives which can achieve the same objective as the proposed project is important in the decision-making process. Both state and federal environmental guidelines require the identification of an environmentally superior or least-damaging alternative. The project proponent does not necessarily have to select the environmentally superior alternative. Considerations other than environmental impact may influence the selection of an overall superior alternative.

The environmental impacts of the Cajon Pipeline project and its alternatives fall into two categories; the long-term impacts of project operation and the short-term impacts of project construction. These are summarized and compared in the following sections.

Long-Term Impacts

None of the alternatives considered are likely to have long-term adverse effects on geologic, biologic or cultural resources or on land use or visual resources. Long-term impacts of the alternatives differ primarily with respect to air pollutant emissions and the risk of environmentally damaging spills. A qualitative assessment of the alternatives with respect to these factors is shown in Table 6-1. Alternative transport modes - tanker truck, rail, and marine, are included in the table for comparative purposes. The basis for the qualitative assessment is discussed previously in this chapter.

TABLE 6-1
Qualitative Comparison Of Long-term Environmental Impacts

Alternative	Air Pollutant Emissions	Risk of Spill	Severity of Spill Consequences
Cajon Pipeline	Low	Low	Low
M-70 Pipeline	Low	Low	Low
Pacific Pipeline	Low	Low	High
Four Corners Line 90	Low	High	Low
Tanker Truck	High	High	Low
Rail	High	Moderate	Low
Marine Transport	High	Moderate	High

TABLE 6-2
Qualitative Comparison Of Short-term Construction-related Impacts

Alternatives	Construction Description	Extent of Construction	Sensitivity of Affected Environments
Cajon Pipeline Alternatives	142 miles of pipeline and two pump stations	High	Moderate
M-70 Pipeline	92 miles of pipeline and four heating and pumping stations	High	Moderate
Pacific Pipeline	170 miles of pipeline and three pump stations	High	High
Four Corners Line 90	Construction of three new heaters and four new pump stations. Line replacement	High	Moderate
Tanker Truck Transport		Low	High
Rail Tanker Transport		Low	High
Marine		Low	High

Short-Term Impacts

Short-term impacts are those that result from construction of the proposed project and are limited to the duration of construction. They consist of traffic disruption, noise and air pollutant emissions directly associated with construction. In general, their magnitude is proportionate to the extent of construction, although their severity or effect is closely related to the sensitivity of the affected environment. Table 6-2 provides a qualitative comparison of short-term impacts resulting from construction of the alternatives. The basis for the assessment is discussed previously in this chapter.

Identification of the environmentally superior alternative involves the consideration of both permanent, long-term impacts and temporary, short-term impacts. However, more weight is given to the long-term impacts due to their persistence and temporal extent. As reflected in the information contained in Table 6-2, all four pipeline alternatives are superior to the other modes of transport—tanker truck, rail or marine tanker. The Cajon Pipeline, the M-70 Pipeline and the Four Corners Line 90 are superior to the Pacific Pipeline, because in the event of pipe rupture and a spill, the affected environments are less sensitive (Table 6-2). Unlike the others, the Pacific Pipeline has the potential to introduce oil into the estuarine and marine environment. Of the remaining three alternatives, the risk of spill would be least for the M-70 Pipeline because it is the shortest and uses a new or recently built pipeline. The risk of spill would be the greatest for the Four Corners Line 90 because it would be the longest and would use 185 miles of pipe that is more than 30 years old. The risk of spill for the Cajon Pipeline would fall between the two.

If only long-term impacts were considered, the M-70 Pipeline, the Cajon Pipeline and the Four Corners Line 90 Pipeline would be ranked one, two and three with respect to their desirability from an environmental point-of-view. Introducing short-term construction impacts into the equation favors the Four Corners Line 90 Pipeline because it does not involve construction along the entire route but only at the locations of the three new heater stations and the four new pump stations. Thus the overall ranking might be the M-70 Pipeline first, followed in second place by the approximately equal Cajon and Four Corners Line 90 Pipelines.

If fulfillment of the goals of the proposed project is a criterion, then the picture changes. Neither the M-70 nor the Four Corners Line 90 can deliver a maximum of 180,000 BPD of crude oil to the Los Angeles Basin. In fact, the M-70 and Four Corners Line 90 together could deliver approximately 190,000 BPD. Thus, the appropriate comparison should be between the environmental impacts of the Cajon Pipeline and the combined environmental impacts of the M-70 and Four Corners Line 90 Pipelines. Viewed in this light, the Cajon Pipeline becomes the environmentally superior alternative.

CEQA/NEPA Considerations

7.0

7. CEQA/NEPA CONSIDERATIONS

7.1 RELATIONSHIP OF SHORT-TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE OF LONG-TERM PRODUCTIVITY

Construction of the Cajon Pipeline would necessitate short-term use of the environment for project construction and operation. Potential environmental impacts associated with the construction and operation of the pipeline are discussed in Section 5. At the end of the operational life of the pipeline, all facilities would be removed and the ground returned as much as possible to conditions prior to project implementation.

Mitigation measures would be included in the project to minimize the effects of potential environmental impacts. The majority of the project impacts are construction-related, and activities would not result in any significant long-term impacts. No long-term risks to health and safety would result from implementation of the proposed project, except in the event of a major accidental oil spill that could not be contained or controlled. Such a spill is virtually impossible because of the viscous characteristics of the oil and the safety features built into the pipeline system.

7.2 SIGNIFICANT IRREVERSIBLE IMPACTS

CEQA states that impacts associated with a proposed development may be considered to be significant and irreversible if:

- The project would involve a large commitment of non-renewable resources.
- The primary and secondary impacts of a project would generally commit future generations to similar uses (such as a highway improvement that provides access to a previously inaccessible area).
- The project involves uses in which irreversible damage could result from potential environmental accidents associated with the project.

Pipeline construction would result in an irretrievable and irreversible commitment of natural resources from direct consumption of fossil fuels for construction, materials used during construction, the manufacture of new equipment that cannot be recycled at the end of the project's useful lifetime, and energy required for the production of materials used in the new equipment. However, the small scale of the project would result in an adverse but not significant impact due to this consumption of resources.

The Cajon Pipeline project would result in burial of the pipeline for 142 miles within a designated utility corridor. Future development would need to consider the placement and location of the pipeline. Construction would not result in an irreversible or irretrievable commitment of resources because the land would be able to be restored to its original condition at the end of the project's useful life-time. The land above these underground facilities would then be available for other possible beneficial uses.

The construction and operation of the proposed project would not result in the loss of any plant or animal species, but it would involve the loss of individual plants and animals. Biological habitat would not be affected by any irreversible or irretrievable activities. If cultural or paleontological resources are encountered during construction and cannot be avoided, data recovery would be conducted so that there would be no significant loss of information.

7.3 GROWTH-INDUCING IMPACTS

Section 215126(g) of the CEQA Guidelines requires a discussion of the ways in which the proposed project could induce economic, population, or housing growth, either directly or indirectly, in the surrounding environment. Induced growth is distinguished from the direct employment, population, or housing growth resulting from a project as the secondary or indirect growth associated with direct growth. A project could also induce growth by lowering or removing barriers to growth or by creating an amenity that attracts new population or economic activity.

Construction of the Cajon Pipeline would require a workforce of 227 construction workers and an operational workforce of 25 to 30 permanent employees in Adelanto. This increase in employment represents only a small percent of the total available workforce in Los Angeles and San Bernardino counties and could therefore be readily accommodated by the present labor force. No unusual construction equipment, materials, or supplies would be required for the project. These would be procurable from existing manufacturers, vendors, and other suppliers. Based on these considerations the proposed project would not be growth inducing.

Operation of the project would result in delivery of up to 180,000 BPD of crude oil into the Los Angeles Basin via the Cajon Pipeline. The present refinery capacity would be adequate to process this increase without resulting in an increase of refinery employees or equipment. If this project did not proceed, the present need for crude oil within the Los Angeles Basin would be such that the demand would be met by other transportation modes. Because the use of oil in the Los Angeles Basin would not be increased by the proposed project, the project is not regarded as growth inducing.

7.4 UNAVOIDABLE SIGNIFICANT ADVERSE IMPACTS RESULTING FROM PROJECT IMPLEMENTATION

Environmental impacts associated with the Cajon Pipeline are summarized in Table 2-1. The majority of impacts are adverse but not significant, and mitigation measures can be proposed which would reduce the impacts to less-than-significant levels. However, even after mitigation, impacts from an accidental large spill of crude oil would be significant and unavoidable.

The risk of oil spill would occur throughout the life of the project. Mitigation measures have been included to minimize the risk of occurrence, reduce the amount of the oil spill, and increase the effectiveness of oil spill response and cleanup. However, these measures can not completely eliminate the potential for significant environmental damage in the event of an oil spill.

7.5 MITIGATION MONITORING PROGRAM

Effective January 1, 1989, the California Environmental Quality Act (CEQA) was amended to add Section 21081.6, implementing Assembly Bill (AB) 3180. As part of CEQA (state-mandated) environmental review procedures, AB 3180 requires a public agency to adopt a monitoring and reporting program for assessing and ensuring efficacy of any required mitigation measures applied to proposed development. As stated in Section 21081.6 of the Public resources Code:

> "... the public agency shall adopt a reporting or monitoring program for the changes to the project which it has adopted, or made a condition of project approval, in order to mitigate or avoid significant effects on the environment."

AB 3180 provides general guidelines for implementing monitoring and reporting programs Specific reporting and/or monitoring requirements, to be enforced during project implementation, shall be defined prior to final approval of the project proposal by the responsible decision maker(s). In response to established CEQA requirements and those of AB 3180 (Public Resources Code Section 21000 et seq.), the proposed mitigation monitoring program shall be submitted for consideration prior to completion of the environmental review process to enable decision-maker's appropriate response to the proposals. The proposed project should be included in the draft environmental document to allow public circulation and review of the proposal; a mitigation monitoring program shall be provided as part of the Final EIR.

The draft Mitigation Monitoring Program is presented in Volume II of this Final EIS/EIR. Each required mitigation measure is listed and categorized by impact area, with accompanying discussion of:

- The party or parties responsible for implementation;
- The phase of the project during which the measure should be monitored;
    - Pre-construction
    - Construction
    - Post-construction

In some cases, a specific mitigation measure may require compliance monitoring during two or three phases of the project. Such cases are noted within the discussion of the specific mitigation measure.

The City of Adelanto is the Lead Agency under CEQA, however the BLM will serve as the "clearinghouse" for the mitigation monitoring program, and as such is listed as a monitoring agency throughout the program. As the "clearinghouse", BLM will ensure that the required mitigation measures are carried out by the various enforcement agencies. Compliance with each mitigation measure shall be monitored by the BLM, and a record kept of the project's compliance or non-compliance.

The project shall demonstrate compliance with each mitigation measure in a written report submitted to the applicable enforcement agency prior to issuance of a ROW grant, grading permit or operation, and, as applicable, provide periodic reports regarding compliance with such conditions.

8.0

Consultation and Coordination

8. CONSULTATION AND COORDINATION

8.1 PUBLIC INVOLVEMENT

Public Notices

On July 24, 1991, BLM issued a Notice of Intent (NOI) to Prepare an Environmental Impact Statement for the proposed Cajon Pipeline project pursuant to NEPA. On July 1, 1991, the City of Adelanto likewise issued a Notice of Preparation (NOP) to prepare an EIR pursuant to CEQA. Copies of the NOI and NOP are included in Appendix B. The NOI and NOP were circulated for a 45 day period to governmental agencies and interested parties for their written comment. Issues raised in written response to the NOI and NOP have been addressed in the EIS/EIR and are included in Appendix B.

Scoping Meetings

On August 13, 14 and 15, 1991, the BLM and City of Adelanto (the Joint Review Panel) hosted public scoping meetings in Pomona, Carson and Adelanto, California to describe and discuss the proposed crude oil pipeline and to give the public the opportunity to suggest potentially significant environmental impacts that should be evaluated in the EIS/EIR. Both the NOP, NOI, and notice for the public scoping meetings were advertised in 3 different newspapers Los Angeles Times, Press-Telegram and the Adelanto Bulletin. Although there were no major issues raised at the workshops, questions regarding the precise location of the pipeline route were of concern to some participants.

8.2 PERSONS/ORGANIZATIONS CONSULTED DURING EIS/EIR PREPARATIONS

U.S. Department of Air Force

Sharon McLain, Plans and Programs Office

U.S. Army Corps of Engineers

Terry Witherspoon, Operations

U.S. Department of Fish and Wildlife

Ray Bransfield, Wildlife Biologist

U.S. Forest Service

San Bernardino National Forest
Kate Clifford, Assistant Lands Officer
Sharon Dougherty, District Biologist
Melody Lardner, Forest Botanist and Range Conservationist
Marilyn Mazlowski, Forest Archaeologist
Mike Florey, Forest Engineering Officer

Angeles National Forest
Rich Borden, Special Projects Coordinator

California Department of Fish and Game

Frank Hoover

Caltrans

Paul Gonzales, Chief, Environmental Studies Branch
Gerald Franz, Permit Engineer
Jo Ann DuBry, Right of Way Agent

City of Compton

Linda Timmons, Building and Safety
S. Kofi, Community Redevelopment Agency

City of Industry

Brian Ridenour, Engineering Department

City of Montclair

Christine Sanchez, Assistant Planner

City of Ontario

Stu Ward, Engineer Trainee
John Freiman, Deputy City Planner

City of Pomona

Raymond Fong, Senior Project Coordinator

City of Rancho Cucamonga

Brad Buller, Planning Department

8.3 COORDINATION WITH FEDERAL, STATE, AND LOCAL AGENCIES

In addition to the notification process described above for the NOI and NOP, consultation and coordination were otherwise undertaken with governmental agencies, as required by law, to evaluate potential impacts of the proposed program.

U.S. Forest Service

Information on the proposed Cajon Pipeline was sent to the U.S. Forest Service, San Bernardino National Forest in 1991. Several meetings were held to identify National Forest concerns. Due to the USFS concerns, the USFS has since become a cooperating agency in the production of the EIS/EIR.

Edwards Air Force Base

In August, 1992 the original pipeline alignment was rerouted to follow existing utility corridors from M.P. 0 to M.P. 25. This meant that approximately 4 miles of the alignment would pass through Edwards Air Force Base. At this time, Edwards was notified of the need for field survey within the base boundary. Due to the crossing of base land, Edwards AFB has since become a cooperating agency in the production of the EIS/EIR.

U.S. Fish and Wildlife Service and California Department of Fish and Game

Formal consultation under Section 7 of the Endangered Species Act of 1973 as amended is being undertaken through the Bureau of Land Management with the U.S. Fish and Wildlife Service. Consultation is also underway with the California Department of Fish and Game in accordance with the California Endangered Species Act 2081 permitting regulations. The project must conform to the Biological opinion and there will be no decision until the Biological Opinion is received. Extensive field survey work described below has been utilized in the development of a Biological Evaluation/Biological Assessment for the consultation. The Biological Evaluation/Biological Assessment and the results of the field work are contained within the Technical Appendix I of this document.

8.4 RELATIONSHIPS TO ENVIRONMENTAL PROTECTION STATUTES AND OTHER REQUIREMENTS

FEDERAL

National Environmental Policy Act of 1969, As Amended

This document has been prepared in accordance with this act, Public Law 91-190 as amended, 42 United States Code section 4321 et seq., and with the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the Act.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act requires that federal agencies consult with the USFWS and state fish and game agencies before undertaking projects that control or modify surface water. The consultation is intended to promote the conservation of wildlife resources by preventing loss of or damage to these resources and by providing for their development and improvement. The NOI and NOP were sent to the USFWS and CDFG, and their written comments have been considered in preparation of the EIS/EIR.

Endangered Species Act of 1973, As Amended

Under this act, the USFWS has authority over terrestrial and freshwater species, and the Natural Marine Fish Services (NMFS) has authority over marine species. As required by Section 7 of the act, lists of endangered and threatened species that might be affected by the proposed program were requested from the USFWS on (Appendix B).

The act requires that federal agencies do not jeopardize the continued existence of endangered or threatened species or cause the destruction or adverse modification of critical habitat for these species. However, under some circumstances, the Secretary of the Interior or the Secretary of Commerce can permit actions that are adverse to a species or its habitat. The Biological Resources section in Chapter 5 evaluates the potential for the proposed program to cause such jeopardy.

National Historic Preservation Act of 1966, As Amended

As required by this act, the National Register of Historic Places and the California Historical Landmark system were referenced to determine whether the program site contains any listed cultural resources. The literature search and field surveys did not find any eligible cultural resources in the program area, nor were any sites of religious importance to American Indians evident. Chapter 5 recommends actions that should be undertaken if any previously undiscovered cultural resources are uncovered during project construction.

Clean Air Act

This act authorized the EPA to set National Ambient Air Quality Standards (NAAQS) and resulted in the promulgation of primary standards to protect public health and secondary standards to protect public welfare. The proposed program would result in minor temporary impacts to air quality during construction. As evaluated in Chapter 5, emissions from construction vehicles and pipeline operation would comply with both state and regional air quality standards.

Clean Water Act of 1977

In compliance with guidelines 40 CFR 230.10(c) (promulgated by the EPA under Section 404(b) of the Clean Water Act), no discharge of dredged or fill material would be permitted under the proposed program which would cause or contribute to significant degradation of the waters of the U.S..

Executive Order 11988, Floodplain Management

Under Executive Order 11988, federal agencies are required to prepare floodplain assessments for proposals located within or affecting floodplains. If an agency proposes to conduct an action within a floodplain or if a project is to be sited in a floodplain that will be using federal funds or requires federal approval, alternatives must be considered to avoid adverse effects and incompatible development in the floodplain. If the only practicable alternative involves siting the project in a floodplain, potential harm to or within the floodplain must be minimized. Since no buildings are proposed in floodzones, code requirements consistent with Federal Flood Insurance program do not apply.

Executive Order 11990, Protection of Wetlands

Executive Order 11990 requires federal agencies to prepare wetland assessments for proposals located within or affecting wetlands. Agencies must avoid undertaking new construction located in wetlands unless no practicable alternative is available to minimize harm to wetlands. No wetlands were identified in the program area during field surveys.

STATE

California Environmental Quality Act of 1970

This document has been prepared in accordance with this act, Public Resource Code Section 21000 et seq., and State CEQA Guidelines promulgated by the Secretary of Resources in Title 14 of the California Code of Regulations, Section 15000 et seq. as they relate to the proposed pipeline.

Mulford-Carrell Act

This act, enacted in 1969, established California Ambient Air Quality Standards (CAAQS). As evaluated in Chapter 5, emissions from construction vehicles and pipeline operation would comply with both State and regional air quality standards.

8.5 REVIEWING AGENCIES

This EIS/EIR will be circulated to the following federal, state and local agencies.

Federal

Bureau of Indian Affairs
Bureau of Mines
Bureau of Reclamation
Department of Energy
Geological Survey
U.S. Army Corps of Engineers - Los Angeles District
U.S. Department of Defense
U.S. Department of Interior
U.S. Environmental Protection Agency - Region IX
U.S. Fish and Wildlife
U.S. Forest Service
Minerals Management Service
National Park Services

State

State of California Department of Transportation, Districts 7 and 8
State of California Department of Parks and Recreation
State Fire Marshall, Office of Pipeline Safety
California Highway Patrol
California Public Utilities Commission
California Coastal Commission
California Air Resources Board
State Clearinghouse
State of California, California Regional Water Quality Control Board - Los Angeles Region
State of California, Office of Planning and Research
State of California, Department of Conservation
State of California, Department of Fish and Game
State of California, Department of Parks and Recreation
State of California, Department of Transportation
State of California, Resources Agency
State of California, State Lands Commission

Local

South Coast Air Quality Management District
Baldy Mesa School District
Baldy Mesa Water District

Los Angeles Department of Water and Power
Chino Basin Municipal Water District
San Gabriel Valley Municipal Water
Southern California Regional Rail Authority
City of Victorville
City of San Bernardino
City of Rancho Cucamonga
City of Fontana
City of Ontario
City of Pomona
City of Montclair
City of Industry
City of Diamond Bar
City of South El Monte
City of Montebello
City of Commerce
City of Bell Gardens
City of Downey
City of Paramount
City of Compton
City of South Gate
City of Long Beach
City of Carson

County

County of San Bernardino
County of Los Angeles
San Bernardino County Water District
San Bernardino County Flood Control
Metropolitan Water District
Southern California Association of Governments

Private Companies and Individuals

Atchison, Topeka, and Santa Fe Railway
Southern Pacific Transportation Company
Union Pacific Rail Road
Southern California Gas Co.
Southern California Edison Co.
General Telephone

9.0

List of Preparers

9. LIST OF PREPARERS

U.S. Department of the Interior
Bureau of Land Management

Molly Brady, Chief, Division of Planning and Environmental Assistance
Stephen Johnson, Special Projects Manager
Richard Waer, Botanist
Don Armentrout, Wildlife Biologist
Garth Portillo, Archaeologist
Sarah Cunkelman, Archaeologist

City of Adelanto

Roland Dorval, City Engineer

U.S. Forest Service

Gary Earney, Lands Officer

EIP Associates

Ross Geller - Project Manager, Vice President
  BS (Urban Planning) California Polytechnic University.
  Member of American Planning Association.
  Fourteen years of urban and environmental planning.

Bronwyn Buntine - Deputy Project Manager
  BS (Civil Engineering) University of Queensland, Australia.
  California Engineer-in-Training.
  Member of American Society of Civil Engineers .
  Five years experience in hydrology, water quality and water resources management.

John Davis, PE - Project Manager (former), Senior Vice President.
  MS (Sanitary Engineering), University of California, Berkeley.
  BS (Civil Engineering), University of London.
  Registered Engineer (CA).

Twenty years experience in the analysis of water quality issues and in water and wastewater system planning and engineering.

John Oshimo - Regional Economist and Planner
MS (Urban and Regional Planning), University of Southern California
BA(Geography) University of California at Los Angeles
Fifteen years experience in demographics, regional economics, employment, housing, and land use planning.

Sandra Genis, AICP - Urban Planner.
BS (Biology), Stanford University and graduate coursework in environmental studies.
Member of The American Institute of Certified Planners, and
The American Planning Association
Fourteen years experience in urban planning, management, and environmental planning.

Jay Ziff - Environmental Planner and Landscape Architect.
MA (Landscape Architecture), California Polytechnic University, Pomona.
BA (Environmental Studies, Urban Planning), University of California, Santa Barbara.
Four years experience in planning, design, resource management, environmental studies, master planning and urban studies.

Robert R. (Rick) Ware - Marine Biologist, Natural Resources Specialist.
MA (Biology) California State University at Long Beach.
BS (Zoology) California State University at Long Beach.
Member of The Southern California Academy of Sciences,
The Southern California Association of Invertebrate Taxonomists, and
The Society for Ecological Restoration and Management.
Over 15 years of experience conducting marine biological resource surveys and evaluating the impacts of coastal development.

Michael Lott - Environmental Planner.
BA (Geography/Ecosystems), University of California, Los Angeles.
One year of experience in natural resources, environmental studies, and habitat identification.

Joseph Steinberger - Air Quality and Energy Analyst.
MA (Environmental Planning), California State University, San Francisco.
BS (Biology), University of Michigan, Ann Arbor.

Has completed course work for a Masters degree in Architecture from the University of California, Los Angeles (thesis in progress).
Five years experience in environmental and energy work.

Gregg Olson - Environmental Planner/Engineer.
BS (Mechanical Engineering), University of California, Santa Barbara.
California Engineer-In-Training.
Member of the American Society of Mechanical Engineers.
One year experience noise and air quality analysis.

Scott Edmondson, AICP - Environmental Economist.
MA (Urban and Regional Planning), University of California, Los Angeles.
BA (International Development Studies), University of California, Berkeley.
MS (Program in Public Policy Analysis) University of Rochester, New York.
Member of American Institute of Certified Planners.
Ten years experience in economics and investment analysis, demographics.

Word Processing

Dennis Mehaffey
Vincent Varquez
Eloisa Villegas

Graphics

Laurie Eichhorn

SAIC

Charlie Scardino, PE - Senior Engineer.
MS (Public Health), University of North Carolina, Chapel Hill.
BS (Civil Engineering), Northeastern University Boston.
Registered Engineer (NV, VA).
Twenty years experience in environmental and energy analysis.

William Andrews, PE - Senior Engineer.
MBA (Business Administration), University of Washington, Seattle.
BS (Mechanical Engineering), Oregon State University, Corvallis.
Registered Engineer (NV).
Fifteen years experience in hazardous materials and transportation analysis.

Geotechnical Consultants

Neal Mace - Senior Engineering Geologist.
MS (Geology), San Diego State University.
BA (Geology), Pomona College.
Certified Engineering Geologist.
Thirteen years of experience in geologic, geotechnical, hydrogeologic, and seismic analysis.

Ted Powers - Engineering Geologist.
BS (Geology), Humboldt State University.
Certified Engineering Geologist.
Twelve years experience in geologic, geotechnical, hydrogeologic, and seismic analysis.

McKenna et al.

Jeanette McKenna - Principal Investigator
SOPA (Field Archaeology and Historic Archaeology)
MA and BA (Anthropology) California State University at Fullerton
Three years post graduate studies, Tempe, Arizona
Fifteen years experience in cultural resources management

DKS Associates

Maurice Mitchell, PE - Director of Transportation Engineering.
MSc (Civil Engineering), University of Calgary, Canada.
BSc (Highway Engineering), University of Guyana, Guyana.
Registered Engineer (CA).
Twelve years experience in design, construction and planning of transportation projects.

BLM LIBRARY
RS 150A BLDG 50
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, CO 80225

10.0

Acronyms and Abbreviations

10. ACRONYMS AND ABBREVIATIONS

AAPL	- All American Pipeline
ADT	- Average Daily Traffic
APCD	- Air Pollution Control District
API	- American Petroleum Institute
AQAP	- Air Quality Attainment Plan
AQMP	- Air Quality Management Plan
ARB	- Air Resources Board
AT&SF RR	- Atchison Topeka & Santa Fe Railroad
BACT	- Best Available Control Technology
bbls	- barrels
BHP	- brake horse power
BLM	- U.S. Department of Interior, Bureau of Land Management
BPD	- barrels per day
BTC	- City of Los Angeles Board of Transportation Commissioners
BTU	- British thermal unit
Btu/hr	- British thermal units per hour
CA-126	- California State Route 126
CAAQS	- California Ambient Air Quality Standards
CARB	- California Air Resources Board
CCAA	- California Clean Air Act
CDCA	- California Desert Conservation Area
CDFG	- California Department of Fish and Game
CDMG	- California Division of Mines and Geology
CEQA	- California Environmental Quality Act
CFR	- Code of Federal Regulations
cfs	- cubic feet per second
CNDDB	- California Natural Diversity Data Base
CNEL	- Community Noise Equivalent Level
CNPS	- California Native Plant Society
CO	- carbon monoxide
COM Plan	- Construction/Operation/Maintenance Plan
dBA	- decibels A-weighted
DHS	- California Department of Health Services
DOT	- (U.S.) Department of Transportation

DWR	- Department of Water Resources
EIR	- Environmental Impact Report
EIS	- Environmental Impact Statement
EPA	- Environmental Protection Agency
ERT	- Emergency Response Team
EVC	- existing visual conditions
F	- Fahrenheit
ft	- feet
GPD	- gallons per day
H_2S	- hydrogen sulfide
hp	- horsepower
I-5	- Interstate 5
I-15	- Interstate 15
I-710	- Interstate 710 (Long Beach Freeway)
I&M	- Inspection and Maintenance
KCAPCD	- Kern County Air Pollution Control District
LACFCD	- Los Angeles County Flood Control District
LACDPW	- Los Angeles County Department of Public Works
LADWP	- Los Angeles City Department of Water and Power
LA SLRR	- Los Angeles and Salt Lake Railroad
lb/day	- pounds per day
L_{dn}	- day-night (average sound) level
L_{eq}	- energy equivalent noise level
LOS	- level of service
M	- Magnitude (earthquake)
MGD	- Million gallons per day
mg/l	- milligrams per liter
mg/m^3	- miligrams per cubic meter
MP	- Milepost
MSA	- Metropolitan Statistical Area
M-70	- Mobil Line 70
NAAQS	- National Ambient Air Quality Standards
ND	- Negative Declaration
NEPA	- National Environmental Policy Act
NOI	- Notice of Intent
NOP	- Notice of Preparation
NO_x	- nitrogen oxides
NPDES	- National Pollution Discharge Elimination System
NSR	- New Source Review
O_3	- ozone
OPR	- Office of Planning and Research

OPSO - Office of Pipeline Safety and Operations
OSHA - Occupational Safety and Health Administration
OSC - Oil Spill Contingency (Plan)
PACTEX - Pacific-Texas Pipeline Project
Pb - lead
PCE - passenger car equivalency
PM_{10} - particulate matter less than 10 microns in diameter
ppm - parts per million
PSD - prevention of significant deterioration requirements
psi - pounds per square inch
psig - pounds per square inch gauge
ROCs - Reactive Organic Carbon
ROG - Reactive Organic Gases
ROW - right-of-way
RWQCB - Regional Water Quality Control Board
SBCAPCD - San Bernardino County Air Pollution Control District
SCAB - South Coast Air Basin
SCADA - Supervisory Control and Data Acquisition System
SCAG - Southern California Association of Governments
SCAQMD - Southern California Air Quality Management District
SCCAB - South Central Coast Air Basin
SCE - Southern California Edison
SCS - Soil Conservation Service
SDAB - Southeast Desert Air Basin
SEA - Significant Ecological Area
SIP - State Implementation Plan
SJV - San Joaquin Valley
SJVAB - San Joaquin Valley Air Basin
SO_2 - sulfur dioxide
SO_x - sulfur oxides
SPRR - Southern Pacific Railroad
sq. mi. - square miles
SR - State Route
TDS - total dissolved solids
TSP - total suspended particulates
TSS - total suspended solids
UPRR - Union Pacific Railroad
US-101 - U.S. Highway 101
USCG PIRS - (p 6.11-6)
USDA - U.S. Department of Agriculture
USFS - U.S. Forest Service

USFWS - U.S. Fish and Wildlife Service
USGS - U.S. Geologic Survey
VCAPCD - Ventura County Air Pollution Control District
VRMS - Visual Resource Management System
VQO - visual quality objectives
VOCs - Volatile Organic Compounds
$\mu g/m^3$ - micrograms per cubic meter

Glossary

11.0

11. GLOSSARY

Active fault: evidence of Holocene surface faulting that is in the last 200 years

A-weighting: A weighting scheme applied to sound level measurements; corresponding approximately to human hearing sensitivity. Expressed as decibels. A-weighted (dBA).

Air Basin: Jurisdictional boundary influences by physiographical barriers for the regulation of air pollutants of Southeast Air Basin

Ambient noise: A mix of all the existing sound within a given location, room, etc.; background noise.

Aquifer: A body of rock that is sufficiently permeable to conduct ground water and to yield economically significant quantities of water to wells and springs.

Barrel: A measure of volume for oil; equals 42 U.S. gallons.

Bedrock: The rock that underlies gravel, soil, or other superficial material.

Block valve: Pipeline valve designed to prevent the flow of oil in either direction. May be remotely or manually operated.

British thermal unit (BTU): A measure of energy. The quantity of heat required to raise the temperature of one pound of water one degree Fahrenheit at a specified temperature.

California Native Plant Society (CNPS) rating codes: System used to indicate the rarity, endangerment, and distribution of plant species on a scale of 1 to 3 (1 meaning wide distribution/not endangered and 3 meaning limited occurrence/endangered).

Cathodic Protection: Preventing corrosion of the pipeline by passing a current through it.

CEQA: California Environmental Quality Act. Policies enacted in 1970, and subsequently amended, the intent of which is the maintenance of a quality environment for the people of California now and in the future.

CFR: Code of Federal Regulations.

Check Valve: Pipeline valve designed to automatically prevent the backflow of oil.

Community Noise Equivalent level (CNEL): Similar to L_{dn} but adds a 5dB penalty to evening (7:00 p.m. to 10 p.m.) noise levels.

Cumulative impacts: Two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects.

Discharge: Rate of flow at a given instant in terms of volume per unit of time: pumping discharge equals pumping rate, usually given in gallon per minute: stream discharge, usually given in cubic feet per second. In ground water use: the movement of water out of an aquifer. Discharge may be natural, as from springs, seepage, or evapotranspiration, or it may be artificial, with use of constructed drains or wells.

EIR: Abbreviation for Environmental Impact Report. A detailed document required by the California Environmental Quality Act describing and analyzing the significant environmental effects of a project and discussing ways to mitigate or avoid the effects. The term "EIR" may mean either a Draft or a Final EIR, depending on the context. California Environmental Quality Act uses the term "EIR" in place of the term "EIS" which is used in the National Environmental Policy Act.

EIR/EIS: A joint environmental document prepared to satisfy the requirements of both the California Environmental Quality Act and the Nation Environmental Policy Act.

EIS: Abbreviation for Environmental Impact Statement. A detailed document prepared pursuant to the National Environmental Policy Act.

Endangered Plant Species: Species of plants in danger of extinction throughout all or a significant portion of their ranges. Existence may be endangered because of the destruction, drastic change, or severe curtailment of habitat, or because of overexploitation, disease, predation, or unknown reasons. Plant taxa from very limited areas, e.g., the type localities only, or from restricted fragile habitats are usually considered endangered.

Endangered Animal Species: Any animal species in danger of extinction throughout all or a significant portion of its range. This definition excludes species of insects that the Secretary of the Interior determines to be pests and whose protection under the Endangered Species Act of 1973 would present an overwhelming and overriding risk to man.

Environment: The physical conditions which exist within the area which will be affected by a proposed project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. The area involved shall be the area in which significant effects would occur either directly or indirectly as a result of the project. The "environment" includes both natural and manmade conditions.

Fault: A fracture or fracture zone along which there has been displacement of the sides relative to one another.

Fossiliferous: Containing fossils.

Ground water: Water found beneath the land surface, in the zone of saturation below the water table.

Groundwater basin: Underground formation with sides and bottom of relatively impervious material in which groundwater is held or retained. Aquifer or system of aquifers with well defined boundaries.

Habitat: The place where an animal or plant normally lives, often characterized by a dominant plant and codominant form, such as pinyon-juniper habitat.

Hazardous material: Substance which, because of its potential for either corrosivity, toxicity, ignitability, chemical reactivity, or explosiveness, may cause injury to persons and/or damage to property.

L_{dn}: The day/night average sound level, defined as the 24-hour period L_{eq} with 10 dBA added to the nighttime average level, L_n.

LOS: Level of Service. An indicator of traffic conditions at an intersection or on a stretch of roadway, and of the delay that can be expected in the general area; A is the best (no delay) and F is the worst.

Midden: A refuse stock pile associated with a prehistoric cultural resource site.

Mitigation measure: Method or procedure undertaken for the purpose of avoiding or reducing potential impact(s) of an action.

National Register of Historic Places: A list of significant historic and prehistoric sites and districts which provides procedural protection of these properties.

NEPA: National Environmentally Policy Act, 1969 legislation which encourages restoration and maintenance of environmental quality to the overall welfare of living things.

Notice of Intent (NOI): A notice prepared by a federal lead agency to inform cooperating agencies and interested parties of the proposed project. Required by the National Environmental Policy Act.

Notice of Preparation (NOP): A notice prepared and mailed to all responsible agencies and interested parties informing the agencies of the proposed project and inviting comments regarding the scope of issues to be addressed in the EIR. Required by the California Environmental Quality Act.

One-Hundred-Year-Flood: This is the flood which has a 1 percent probability of occurrence in a given year.

Pig: An internal inspection tool used to detect leaks. It is launched into the pipeline and records the pipe wall thickness to determine specific locations where the pipeline show signs of weakness due to corrosion.

Potentially active fault: Evidence of Late Quaternary surface faulting that is in the last 11,000 years.

Project: The whole of an action, which has a potential for resulting in a physical change in the environment.

Rare species: A species which, although not presently threatened with extinction, is in such small numbers throughout its range that it may become endangered if its present environment worsens.

Right-of-way: The right to pass over property owned by another. The strip of land over which facilities such as roadways, railroads, pipelines, or powerlines are built.

Riparian: The area or zone along the banks of a stream or lake that is not covered by water.

Sensitive species: Generic term for any plant or animal species which is recognized by the government or by any conservation group as being depleted, rare, threatened, and/or endangered.

Sensitive receptor: Location such as school, library, park, hospital, residential area where concentration of young children and elderly people would occur and could be disrupted or harmed by exposure to noise, air emissions, etc.

Significant environmental impact: As defined by CEQA, Chapter 3, Article 1, Section 15002 (g), it is "a substantial adverse change in the physical conditions which exist in the area affected by the proposed project."

Slurry: Material used for backfilling.

Soil liquefaction: A condition where soil strength is greatly reduced because of excessive pore water pressure buildup, especially in saturated sandy soils that are subject to compaction remolding triggered by earthquake vibrations.

Spread: The team working on a particular section of the pipeline construction. It consists of units for clearing and grading, ditching, hauling and stringing, pipe bending, line-up, welding, pipecoating, lowering and tying-in, backfilling, and cleanup and restoration.

Subsidence: The settling or sinking of soil layers due to water or oil extraction resulting in compaction and uneven surface elevations.

Surge Tank: Because of capacity limitations in pipeline, crude is periodically diverted into tanks and temporarily stored there until operating conditions allow for it to be re-injected into the line.

Threatened species: Species which, although not presently threatened with extinction, is likely to become endangered in the foreseeable future in the absence of special protection and management efforts.

Viscosity: The degree to which a fluid resists flow under an applied force. A viscous fluid would have a high resistance to flow and would have the consistency of asphalt or molasses, for example.

Visual Resource Management System (VRMS): BLM's method of assessing visual resources by defining landscape character and scenic quality.

Visual Resource: The physical features of a landscape which can be seen (e.g., land, water, vegetation, structures, and other features).

References

12.0

12. REFERENCES

GENERAL

Aspen Environmental Group. Final Supplemental Environmental Impact Report/Statement for the GTC Gaviota Marine Terminal Project. August 1992.

Aspen Environment Group. Draft Environmental Impact Report for the Pacific Pipeline Project. SCH# 92013018. CPUC Application No.: 91-10-013. April 26, 1993.

BLM. BLM Manual. H-1790-1, National Environmental Policy Act Handbook.

BLM. Final Environmental Impact Statement for the Crude Oil Transportation System: Valdez, Alaska to Midland, Texas. 1978.

BLM. Pacific Texas Pipeline Project, Draft, EIS/EIR. Los Angeles Harbor Dept. and Bureau of land Management, Washington, D.C., 1985.

BLM. Proposed Celeron/All American and Getty Pipeline Projects, Draft EIR/EIS. California State Lands Commission and Bureau of Land Management, Washington, D.C., 1984.

Cajon Pipeline Company. Cajon Pipeline Project Application. For the U.S. Department of Interior, Bureau of Land Management and the California State Lands Commission. January 24, 1991.

Council of Environmental Quality. Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act. November 29, 1978.

County of Santa Barbara, Resource Management Department, Energy Division, Woodward-Clyde and Arthur D. Little. Oil Transportation Plan and Draft Environmental Impact Report. January 25, 1884.

Dames and Moore. Final Environmental Impact Report/Statement for the Proposed M-70 Pipeline Replacement and System Optimization Project. SCH 89010177. U.S. Department of Agriculture and the Los Angeles Department of Transportation. February, 1991.

Dames and Moore. Kern River Pipeline Biological Resources Volume II: Mitigation Plan. Kern River Gas Transmission Company, 1990.

ERT. Draft Environmental Impact Report/Environmental Impact Statement, Proposed Angeles Pipeline Project. 1987.

Governors Office of Planning and Research, Office of Permit Assistance. CEQA Guidelines. California, June 1986.

GEOLOGY

Allen, C.R., P. Sy. Amand, C.F. Richter, J.M. Nordquist. Relationship between Seismicity and Geologic Structure in the Southern California Region. Bulletin of the Seismological Society of America. 81(4): p. 753-797, 1965.

Bortugno, E. J. and Spittler, T. E. Geologic Map of the San Bernardino Quadrangle. California Division of Mines, Regional Geologic Map series, No. 3A., 1986.

Castle, R.O. and Yerkes, R.F. Recent Surface Movement in the Baldwin Hills, Los Angeles County, California. U.S. Geological Survey Professional Paper, 1360. 1976. 125 pp.

Clark, M. M. et. al. Preliminary Slip-Rate Table for Late Quaternary Faults of California. USGS Open File Report 84-106, 1984.

Dokka, R. K. Displacements on late Cenzoic strike-slip faults of the Central Mojave Desert. California, --Geology, vol.11, 1983. p. 305-308.

Goldman H.B.. Sand and Gravel in California, an Inventory of Deposits. California Division of Mines and Geology, Bulletin 180-C. 1968. pp. 56.

Miller, R.E. Land Subsidence in Southern California: Engineering Geology in Southern California. 1969. pp. 273-279.

Morton, D. M., Matti, J. C., and Tinsley, J. C. Cucamonga Fault zone Scarps, Day Canyon Alluuvial Fan, Eastern San Gabriel Mountains, Southern California. Geol. Soc. of America Centennial Field Guide, Cordillerean Section, 1987. p. 197-200.

Norris, M.N. and Webb, R.W. Geology of Southern California. John Wiley and Sons, Inc. 1976 pp. 365.

Sharp, R. V.. Variable rates of late Quaternary Strike slip on the San Jacinto Fault. Southern California, Journal of Geophysical Research, vol. 9, 1981 p. 1754-1762.

Sieh, K. E. and Jahns, R. Holocene Activity of the San Andreas Fault at Wallace Creek, California. Geol. Soc. of America Bulletin, vol. 95, 1984. p. 883-996.

Silva, M.A, Burnett, J.L., Rapp, J.S. and Cole, K. Mines and Mineral Produces Active in California. California Division of Mines and Geology, Special Publication 67. 1983. pp.61.

Trieman, J.A. Landslide Hazards in the north half of the Oat Mountain Quadrangles, Los Angles California. California Department of Mines and Geology Open-File Report 87-8 LA. Scale: 1:24,000, 1987.

Working Group on California Earthquake Probabilities. Probabilities of Large Earthquakes Occurring in California on the San Andreas Fault. USGS Open File Report 88-398, 1988.

Weber, F.H. " Preliminary map of the San Gabriel Fault Zone northwest of the Angeles Crest Highway, Los Angeles and Ventura Counties, California. Scale 1:24,000." in Geology and Geomorphology along the San Gabriel Fault Zone, Los Angeles and Ventura Counties. California Division of Mines and Geology, Open-File Report 82-2 LA. 1982. pp. 157.

Weldon, R. J., and Sieh, K. E. Holocene rate of Slip and Tentative Recurrence Interval for Large Earthquakes on the San Andreas Fault, Cajon Pass, Southern California. Geological Society of America Bulletin, vol. 96. 1985. p. 793-812.

Wesnousky, S. G. Earthquakes, Quaternary Faults, and Seismic Hazard in California. Journal of Geophysical Research, vol.91. 1986. p. 12, 587-631.

Yerkes, R. F., McCulloch, T. H., Schoellhamer, J. E., and Vedder, J. G. Geology of the Los Angeles Basin, California - An Introduction. USGS Professional Paper A20-A, 1965.

Yerkes, R.F. " Geologic and Seismologic Setting" in Evaluating earthquake Hazards in the Los Angeles region - an earth science perspective. J.I. Ziony (Ed.), U.S. Geological Survey Professional Paper 1360, 1985.

ONSHORE WATER RESOURCES

California Regional Water Quality Control Board, South Lahontan Region. Water Quality Control Plan, South Lahontan Basin. 1987.

California Regional Water Quality Control Board, Santa Ana Region. Water Quality Control Plan, Santa Ana River Basin. 1984.

California Regional Water Quality Control Board, Los Angeles region. Water Quality Control Plan, Los Angeles River Basin. 1978.

Federal Emergency Management Agency. Flood Insurance Rate Maps. 1980.

Los Angeles County Department of Public Works, Hydrologic/Water Conservation Division. Hydrologic Report. 1990.

Los Angeles County Department of Public Works. "The San Gabriel River and Montebello Forebay Water Conservation System".

State of California, Department of Water Resources. Mojave Ground Water Basins Investigation. Bulletin No. 84, August 1967.

U.S. Geological Services. Water Resources Data - California Water Year 1984. Vol 1. USGS Water Data report CA-84-1.

BIOLOGICAL RESOURCES

Abrams, L. and Ferris, R. Illustrated Flora of the Pacific States: Washington, Oregon and California. Stanford University Press. California, 1940-1960.

Dale, Nancy. Flowering Plants of the Santa Monica Mountains. Capra Press. Santa Barbara. California, 1986.

Guthrie, Daniel A. Status of least Bell's vireo along the Santa Clara River and its tributaries near Valencia, California. Joint Sciences Department, Claremont Colleges, Spring 1989.

Guthrie, Daniel A. Status of least Bell's vireo along the Santa Clara River and its tributaries near Valencia, California. Joint Sciences Department, Claremont Colleges, Spring 1989.

Holland, Robert F. Preliminary Descriptions of the Terrestrial Natural Communities of California. Department of Fish and Game, 1986.

Barbour, Michael and Major,Jack (eds). Terrestrial Vegetation of California. California Native Plant Society Special Publication No. 9, 1988.

Dames and Moore. Project Description, flood control and site drainage facilities, Valencia Commerce Center. August 25, 1987.

Haglund, Thomas R. Current status of the unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*) along portions of the Santa Clara River drainage. May 1, 1989.

Joyce, Shawna. Unpublished comments on Mobil M-70 Pipeline Project Administrative Draft EIR/EIS. 1990.

Munz, Phillip, A. A Flora of Southern California. University of California, Berkeley. California, 1974.

Remsen, J.V. Bird Species of special concern in California: an annotated list of declining or vulnerable bird species. California Department of Fish and Game, Nongame Wildlife Investigations, Wildlife Management Branch, Administrative Report 78-1, 1978.

Rindlaub, Katherine. Cajon Pipeline Project Botanical Survey 12-Gauge Lake Tank Farm Site to Cajon Wash. California, 1991.

San Diego Association of Governments and recon. Draft Comprehensive Species Management for the Least Bell's Vireo. 1990.

USDA. Final Environmental Impact Statement. Angeles National Forest Land and Resources Management Plan. Forest Service Pacific Southwest Region. USDA, 1987.

Smith, J.P. and Berg, K. (Eds). Inventory of Rare and Endangered Vascular Plants of California. California Native Plant Society, Special Publication No. 1, 1989.

Wickenheiser, L.P. Report to the Fish and Game Commission on the status of Gambel's watercress (*Rorippa gambellii*). CDFG, National Heritage Division, Status Report 89-27, 1989.

AIR QUALITY

American Peetroleum Institute. Volume I - Fugitive Emissions from Petroleum Production Operations. API Publication No. 4322, March 1980.

Arthur D. Little Inc. Final Report, Santa Barbara County Chevron Pt. Arguello Field SEIR, Air Quality Analysis. November, 1990.

Assumption of natural gas fired heaters based on Celeron/All American and Getty Pipeline EIR, Appendix A, p.A-13, Twelve Gauge Pump Station, EPA AP-42 emission factor.

California Air Resources Board. Air Quality Data Summary. 1988-1990.

Curtis D. Dlassen, PhD. and Mary O. Amdur, PhD. John Doull, M.D. PhD. Casarett and Doull's Toxicology. 1986.

Southern California Association of Governments. Air Quality Management Plan, 1991.

NOISE

City of Los Angeles. EIR Manual for Private Projects. August 1975.

City of Los Angeles. Outdoor Noise in the Metropolitan Environment. 1970.

San Bernardino County Environmental Management Group. Performance Standards, Section 87.0905.

VISUAL RESOURCES

BLM. California Desert Conservation Area Plan, 1980.

U.S. Forest Service. Visual resource Management Guidelines. USDA, 1987.

LAND USE

BLM. California Desert Conservation Area Plan, 1980.

U.S. Department of Agriculture, Forest Service. San Bernardino National Forest Land Resources Management Plan, 1988.

SOCIOECONOMICS

SCAG. Growth Management Plan, 1989.

TRANSPORTATION

Transportation Research Board. Highway Capacity Manual. Special Report No. 209, Washington DC., 1985.

SYSTEM, SAFETY AND RELIABILITY

ANSI B31.4, Liquid Transportation Systems for Hydrocarbons, 1989 Edition.

American Petroleum Institute (API 650). Welded Steel Tanks for Oil Storage. 1988 Edition.

American Petroleum Institute (API 1104). Welding of Pipelines and Related Facilities. 1988 Edition.

American Petroleum Institute (API 60). Specifications for Pipeline Valves. 1991 Edition.

Benedetti, Robert P., Ed. Flammable and Combustible Liquids Code Handbook, 4th Edition, 1991.

BLM, Pacific Texas Pipeline Project, Draft, EIS/EIR. Los Angeles Harbor Dept. and Bureau of land Management, Washington, D.C., 1985.

BLM, Proposed Celeron/All American and Getty Pipeline Projects, Draft EIR/EIS. California State Lands Commission and Bureau of Land Management, Washington, D.C., 1984.

Cajon Pipeline Company, Ltd. Proposed Pipeline Project - Proposed Project, A Crude Oil Transportation System from 12 Gauge California to Carson California. 1991.

Code of Federal Regulations (40 CFR), Part 112, Oil Pollution Prevention, 1985 Edition.

Code of Federal Regulations (49 CFR), Part 195, Transportation of Hazardous Liquids by Pipeline, 1986 Edition.

U.S. Dept. of Transportation, Research and Special Programs Administration. Pipeline Accident/Incident Data. Washington, D.C., 1990.

Environmental Protection Agency. Petroleum Pipeline Leak Detection Study. EPA-600/2-82-040, Cincinnati, OH. 1982.

Health and Environmental Digest. Hauling Hazardous Materials. January, 1989.

Long Beach and Los Angeles Harbor Departments and the U.S. Army Corps of Engineers, Los Angeles District. Draft Environmental Impact Statement/Environmental Report Phase I 2020 Plan and Feasibility Study. September, 1990.

Los Angeles Municipal Code, Division 95. Marine Oil Terminals, Tank Vessels, and Tank Barges.

United States Congress, Office of Technology Assessment. Transportation of Hazardous Materials. 1986.

United States Department of Transportation. Pipeline Accident/Incident Data. 1990.

Index

13.0

13. INDEX

Acronyms & abbreviations 10-1
Air Quality 4.4-1,5.4-1
    emissions 5.4-2
    regulations 4.4-4
Alternatives 3-30
    characteristics 3-30
    comparisons 2-56,6-1
    environmentally superior 6-4
    marketing alternatives 3-43
Archaeological Sites 4.11-5,-11

Bell's sage sparrow 4.3-19,5.3-6
Biological Resources 4.3-1,5.3-1

Cajon Pipeline 3-1
    abandonment 3-29
    approvals 1-7
    construction 3-17
    maintenance 3-15
    location 1-2
    personnel 3-25,5.8-6
    project component 3-1
    pump station 3-14
    operations 3-11
    schedule 3-27
    special construction 3-23
    terminal 3-5
    testing 3-23
    valve locations 3-6
California gnatcatcher 4.3-18
Castaic Lake Valley 4.2-6
CEQA Considerations 8-1
Construction Employment 4.8-5,5.8-5
COM Plan 3-14
Consultation 9-1
Cultural Resources 4.10-1,5.10-1
Cumulative Impacts 5.13-1

Desert Tortoise 4.3-13,-19;5.3-7
Downstream Facilities 3-14

Employment 4.9-4,5.9-7

Faults 4.1-2
Federal policies & regulations 1-4,8-4
Four Corners Line 63 Pipeline 3-43
Four Corners Line 90 Pipeline 3-40
Freshwater Biology ....

&E^N

iscussed in the Dra

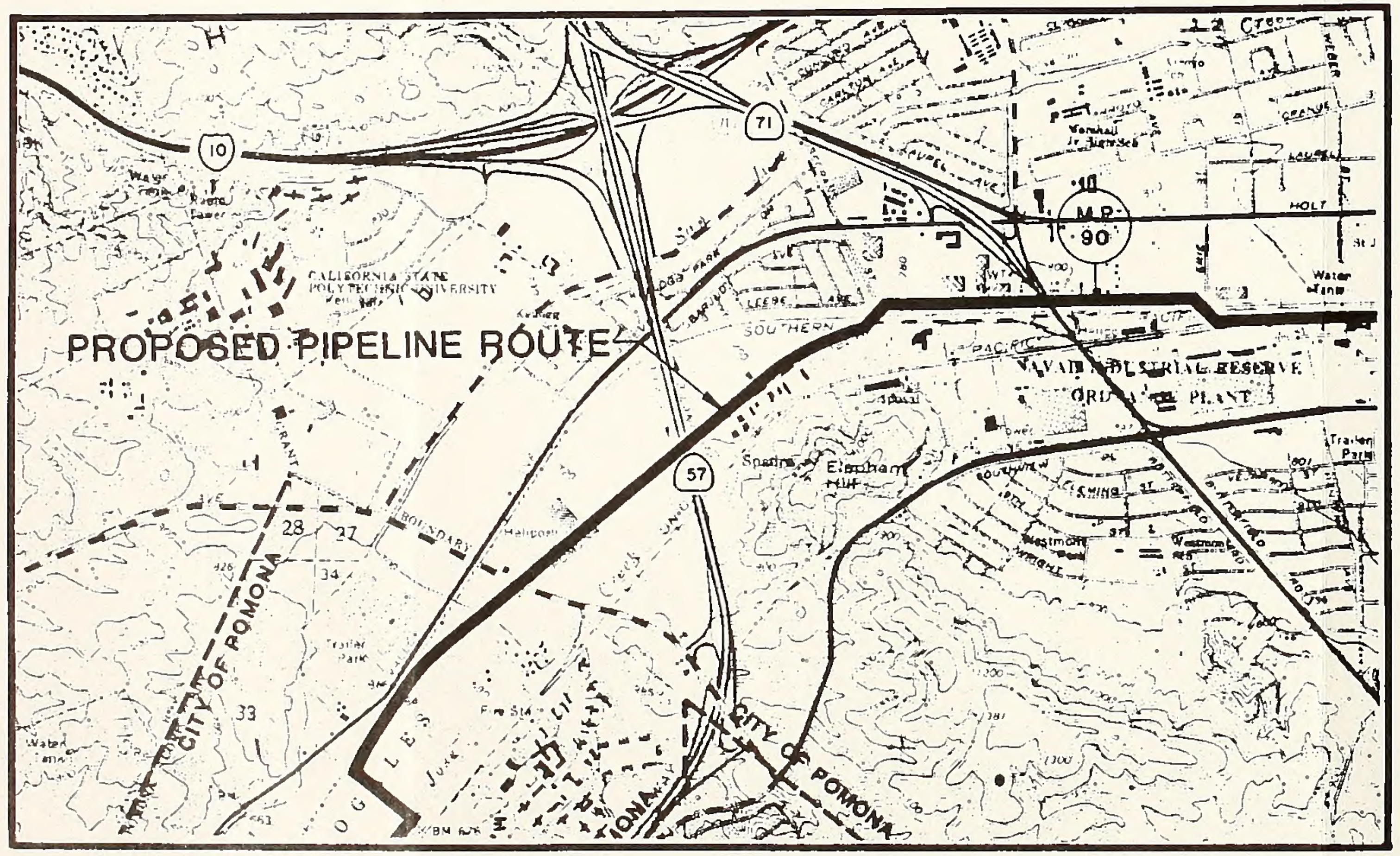
14.0 Appendices

Pipeline Route

A

Key Features Along the Cajon Pipeline Route

Soils mapped within right-of-way	**Soils**
Geological resoursed including fault zones, landslides etc.	**Geology**
Stream crossing locations	**Hydrology**
Sensitive wildlife species & vegetation types within pipeline corridor including Federal and State listed species, candidates for listing, and species of special concern	**Biological Resources**
Paleontological resources, identified as having a High or Low sensitivity	**Paleontology**
Land Use Controlling Agency of right-of-way	**Jurisdiction**
Existing land use adjacent to proposed pipeline route	**Land Use**



An imaginary line extended vertically, perpendicular to the horizontal bars in the descriptor headings (above) shows the location of a specific environmental feature on that portion of the proposed pipeline route below. If the feature extends for a length of the right-of-way it is designated by arrows above.

Legend

Proposed Pipeline ▬▬▬

Alternate Pipeline - - - - -

Gate Valve ⋈

Check Valve

BLM ••••••••

City and County Boundary — — — —

US Forest Service ▰▰▰▰▰

Fault Trace —— ——

LA County Flood Control ||||||||||||||||

Areas of Minimal Flooding **ZONE C**

Area of 100 Year Flood **ZONE A**

Percolation Areas ▒

Scale · 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Mormac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

Abbreviations:

Geology

Jus	Jurassic Sedimentary
Ks	Cretaceous Sedimentary
Mgr	Mesozoic Granite
Ms	Miocene Sedimentary
Ps	Pliocene Sedimentary
Qal	Quaternary Alluvium
QPs	Pliocene-Pleistocene Sedimentary
Qds	Quaternary Dune Sand
Trs	Triassic Sedimentary

Biological Resources

SbS	Saltbrush Scrub
CBS	Creosote Scrub
JTW	Joshua Tree Woodland
SDC	Semi Desert Chaparral
SRS	Southern Riparian Scrub
SMC	Southern Mixed Chaparral
CC	Chamise Chaparral
SS	Sage Scrub
UH	Urbanized Habitat
DT	Desert Tortoise
SLL	Silvery Legless Lizard

Jurisdiction

USFS	US Forest Service
BLM	US Bureau of Land Management
LACFCD	Los Angeles County Flood Control District
LACO	Los Angeles County
SBCO	San Bernardino County

Land Use

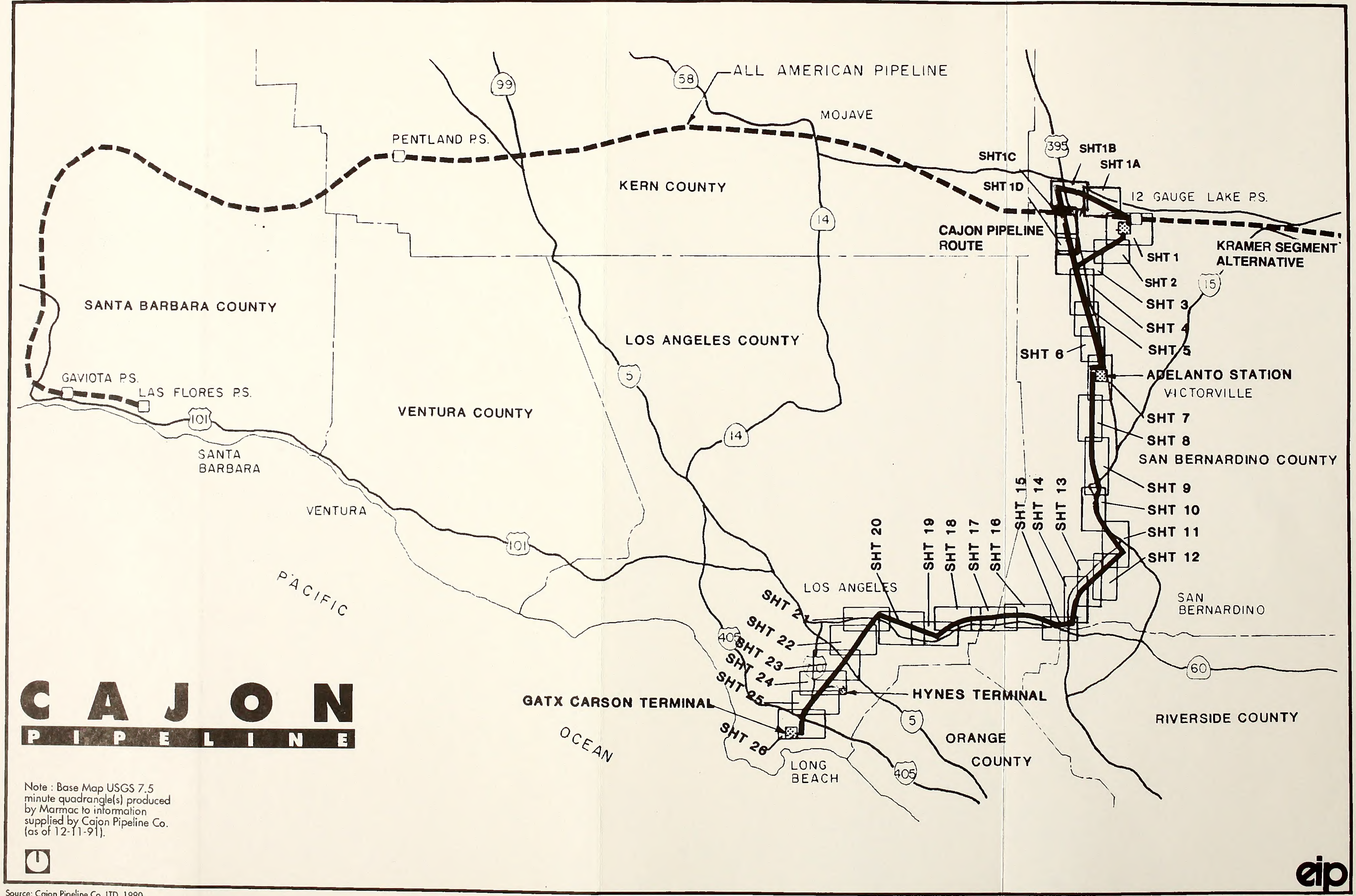
A	Agriculture
C	Commercial
I	Industrial
OS	Open Space
RN	Recreation
R	Residential
PS	Public Services

CAJON PIPELINE

eip

90439

Cajon Pipeline Route Map Index



Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

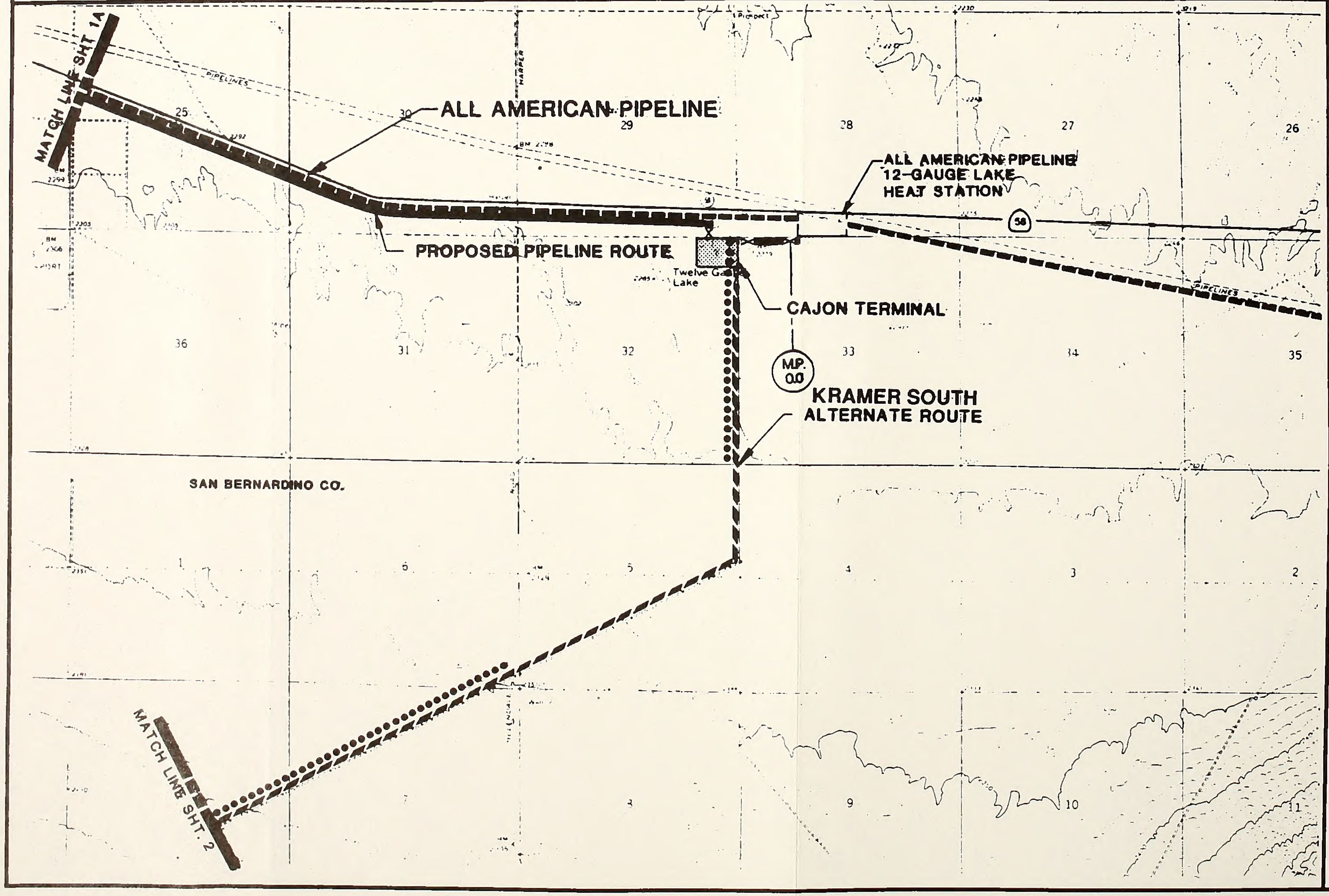
Source: Cajon Pipeline Co. LTD, 1990

90439

Key Features Along the Cajon Pipeline Route

Appendix A: Map 1 of 26

◀ Qoa ▶	Soils
	Geology
	Hydrology
◀ SbS DT ▶	Biological Resources
◀ High ▶	Paleontology
◀ San Bernardina County / BLM ▶	Jurisdiction
◀ OS ▶	Land Use



Legend

Propased Pipeline	▬▬▬
Alternate Pipeline	▬ ▬ ▬ ▬
Gate Valve	⋈
Check Valve	
BLM	••••••••
City and County Boundary	— — — —
US Farest Service	▰▰▰▰▰
Fault Trace	—— ——
LA County Flaod Control	|||||||||||||||
Areas af Minimal Flaading	ZONE C
Area af 100 Year Flood	ZONE A
Percalation Areas	▨

Scale - 1" = 2860'

Nate : Base Map USGS 7.5 minute quadrangle(s) praduced by Marmac ta infarmation supplied by Cajan Pipeline Co. (as af 12-11-91).

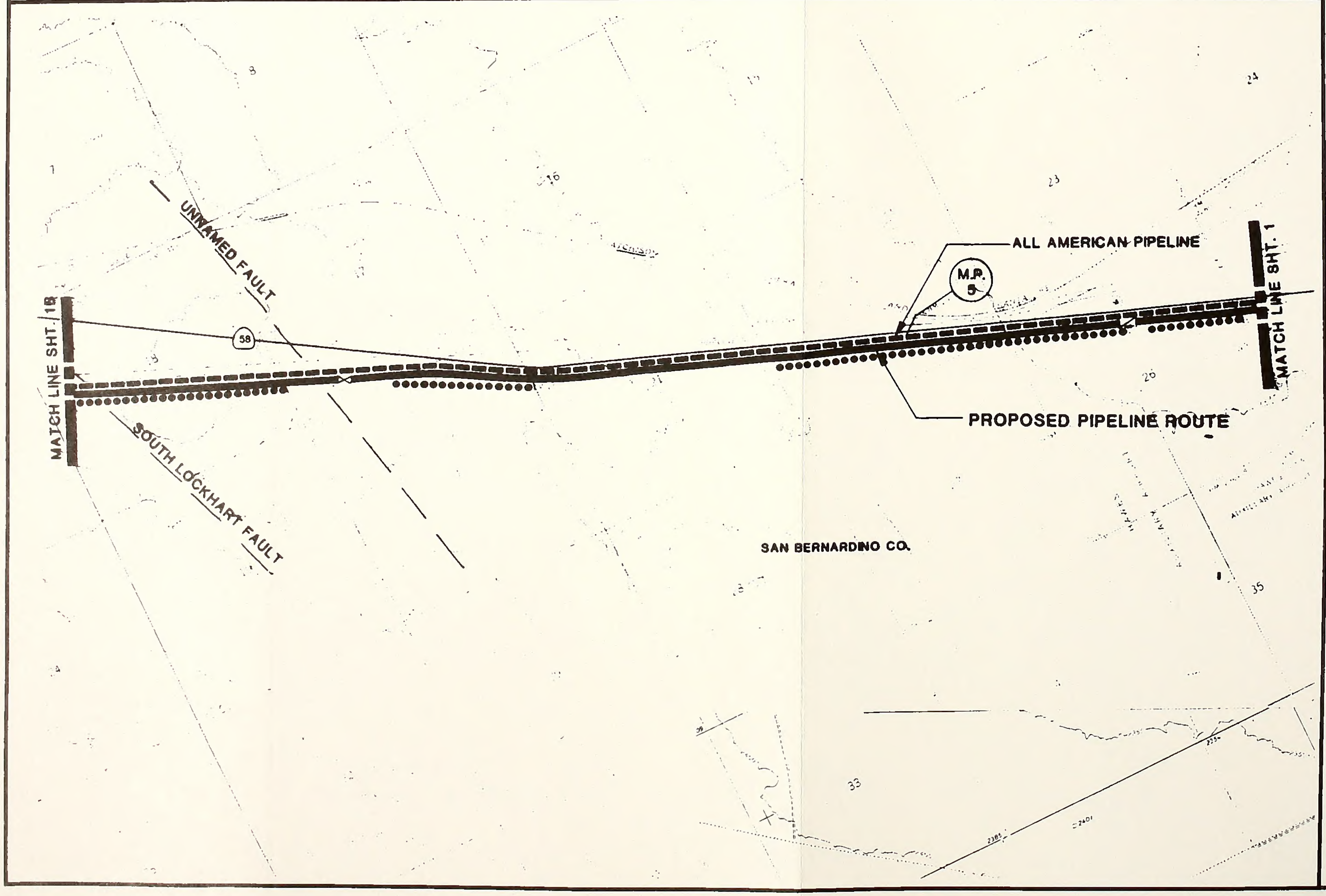
CAJON
PIPELINE

eip

Key Features Along the Cajon Pipeline Route

Appendix A: Map 1A of 26

◀ Qoa ▶	Soils
	Geology
	Hydrology
	Biological Resources
	Paleontology
◀ BLM ▶◀ SBC ▶◀ BLM ▶◀ San Bernardino County ▶◀ BLM ▶◀ ▶◀ BLM ▶	Jurisdiction
◀ OS/Utility Corridor ▶	Land Use



Legend

Proposed Pipeline ▬▬▬
Alternate Pipeline ▬ ▬ ▬ ▬
Gate Valve ⋈
Check Valve
BLM ●●●●●●●●
City and County Boundary — — — — —
US Forest Service ▰▰▰▰▰
Fault Trace —— ——
LA County Flood Control ||||||||||||||
Areas of Minimal Flooding ZONE C
Area of 100 Year Flood ZONE A
Percolation Areas ▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

CAJON
PIPELINE

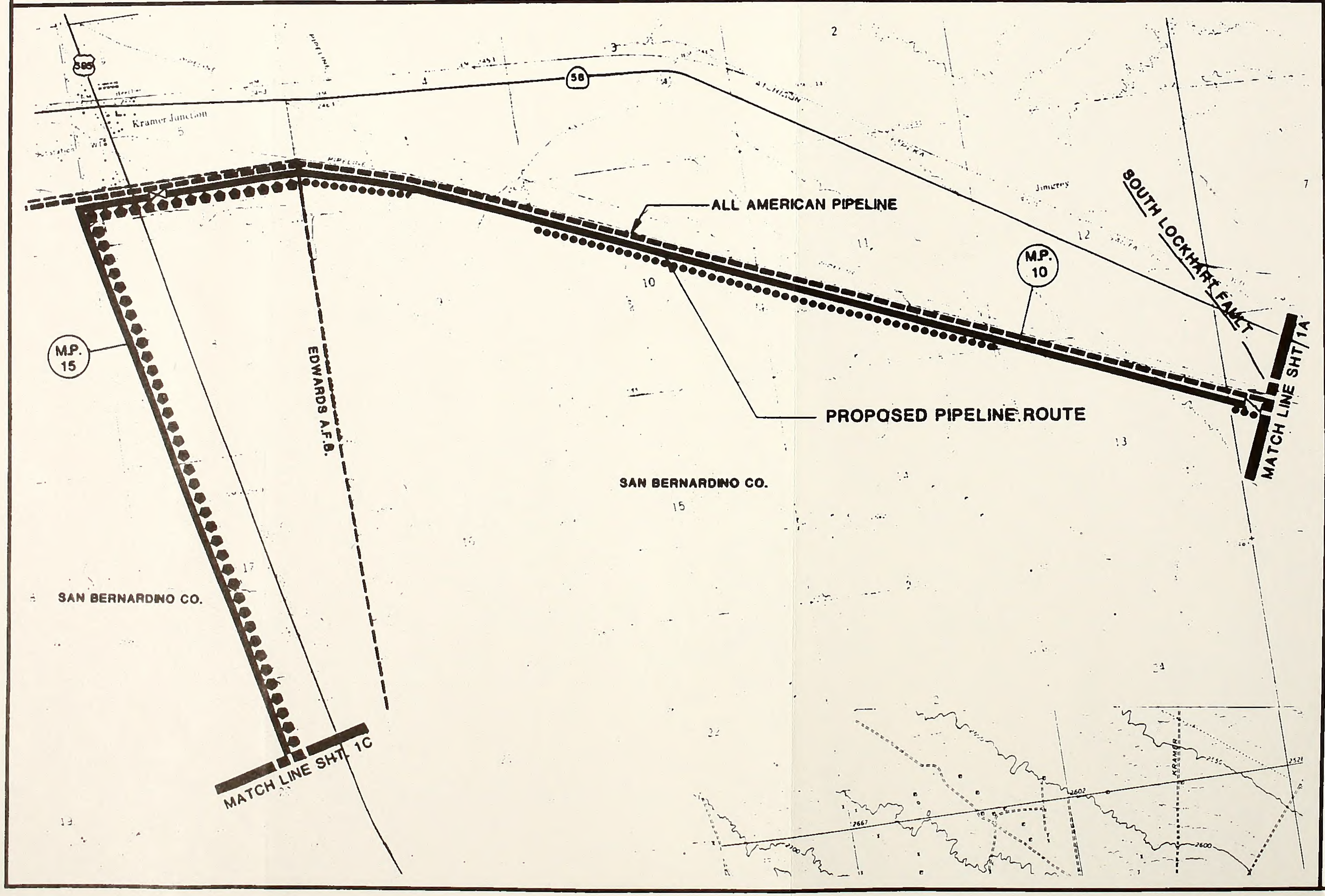
eip

90439

Key Features Along the Cajon Pipeline Route

Appendix A: Map 1B of 26

Soils	◀ Qoa ▶
Geology	
Hydrology	
Biological Resources	◀ SbS DT ▶
Paleontology	◀ High ▶
Jurisdiction	◀ Dept. of Defense ◀ BLM ▶◀ San Bernardino County ▶◀ BLM ▶◀ San Bernardino County ▶
Land Use	◀ Military ▶◀ OS ▶



Legend

Proposed Pipeline ▬▬▬

Alternate Pipeline ▬ ▬ ▬

Gate Valve ⋈

Check Valve

BLM ●●●●●●●●

City and County Boundary — — — —

US Forest Service ▰▰▰▰

Fault Trace —— ——

LA County Flood Control ||||||||||||||

Areas of Minimal Flooding ZONE C

Area of 100 Year Flood ZONE A

Percolation Areas ▨

Scale · 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

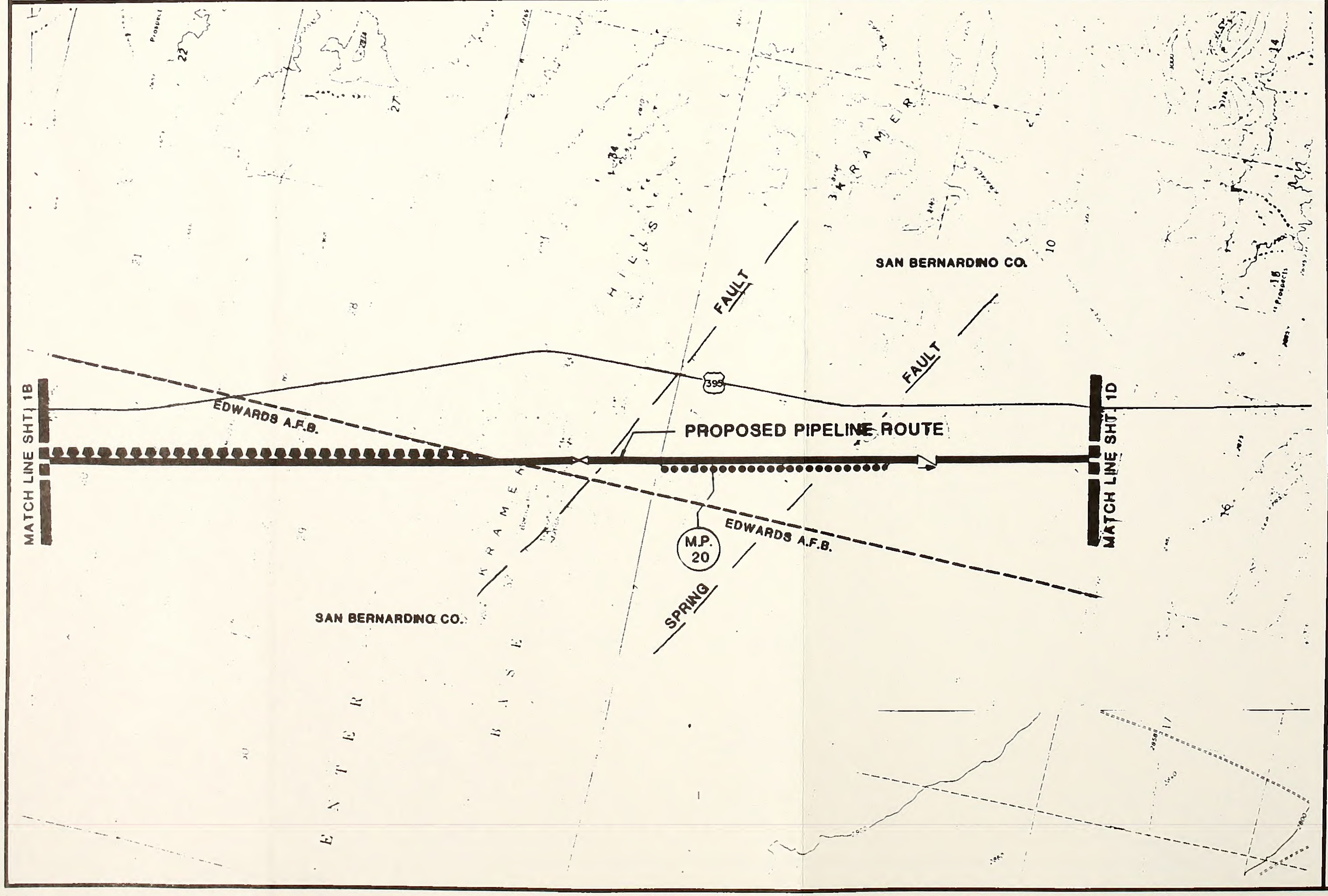
CAJON PIPELINE

eip

90439

Appendix A: Map 1C of 26

	Soils
	Geology
	Hydrology
◀ SbS DT ▶	Biological Resources
◀ High ▶	Paleontology
◀ Dept. of Defense ▶◀ San Bernardino County ▶◀ BLM ▶◀ San Bernardino County ▶	Jurisdiction
◀ Military ▶◀ OS ▶	Land Use



Legend

Proposed Pipeline ▬▬
Alternate Pipeline ‒ ‒ ‒
Gate Valve ⋈
Check Valve
BLM ●●●●●●●●
City and County Boundary ‒ ‒ ‒ ‒
US Forest Service
Fault Trace ── ──
LA County Flood Control ''''''''''''''''
Areas of Minimal Flooding ZONE C
Area of 100 Year Flood ZONE A
Percolation Areas ▨

Scale - 1" = 2860'

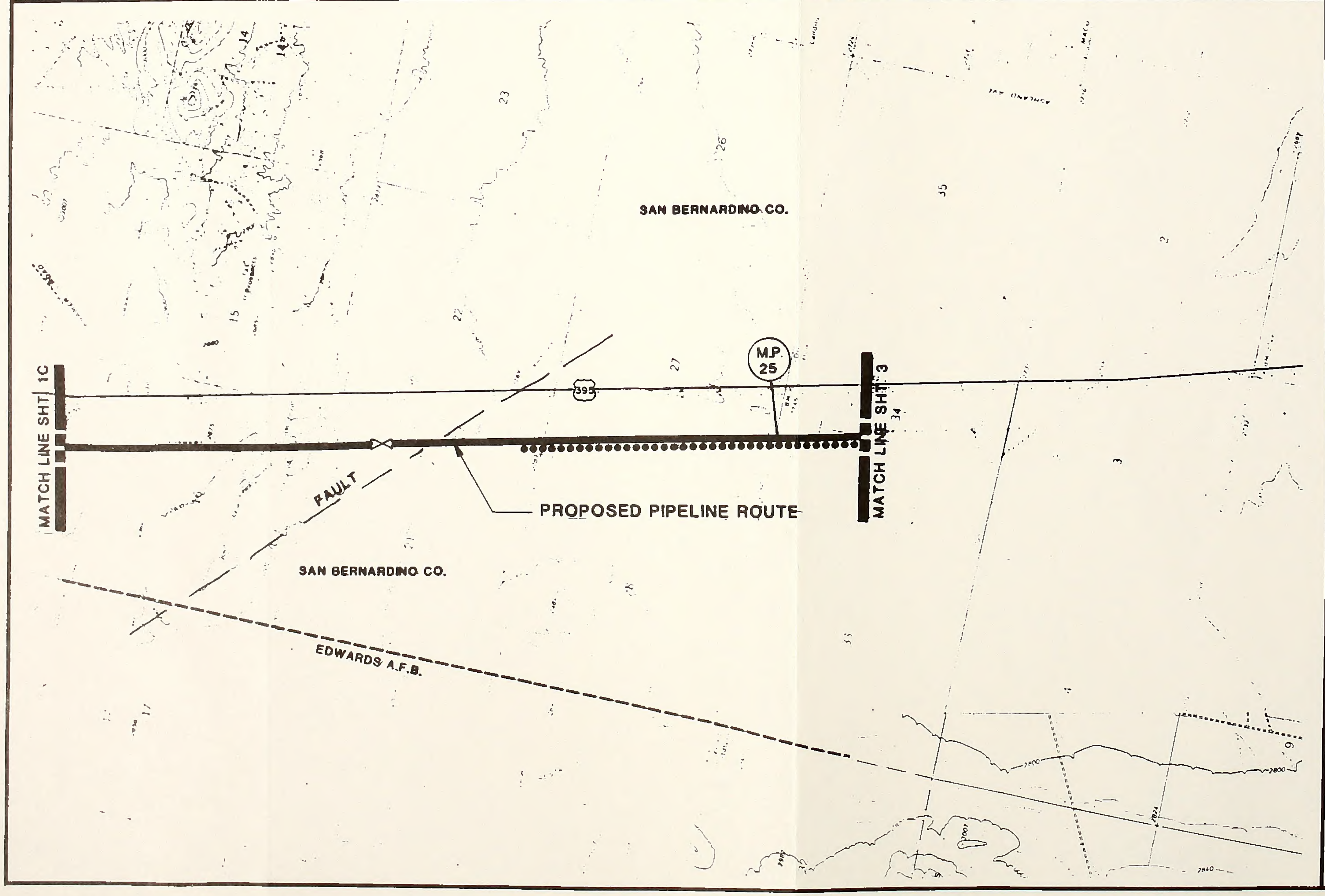
Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

CAJON PIPELINE

eip

90439

Soils	
Geology	
Hydrology	
Biological Resources	◀ SbS DT ▶
Paleontology	◀ High ▶
Jurisdiction	◀ San Bernardino County ▶◀ BLM ▶
Land Use	◀ OS ▶



Legend

Propased Pipeline

Alternate Pipeline

Gate Valve

Check Valve

BLM ●●●●●●●●

City ond County Boundary

US Forest Service

Fault Trace

LA County Flood Control

Areas af Minimal Flaading ZONE C

Area af 100 Year Flaad ZONE A

Percolation Areas ▨

Scale · 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) praduced by Marmoc ta informatian supplied by Cajan Pipeline Ca. (os of 12-11-91).

CAJON PIPELINE

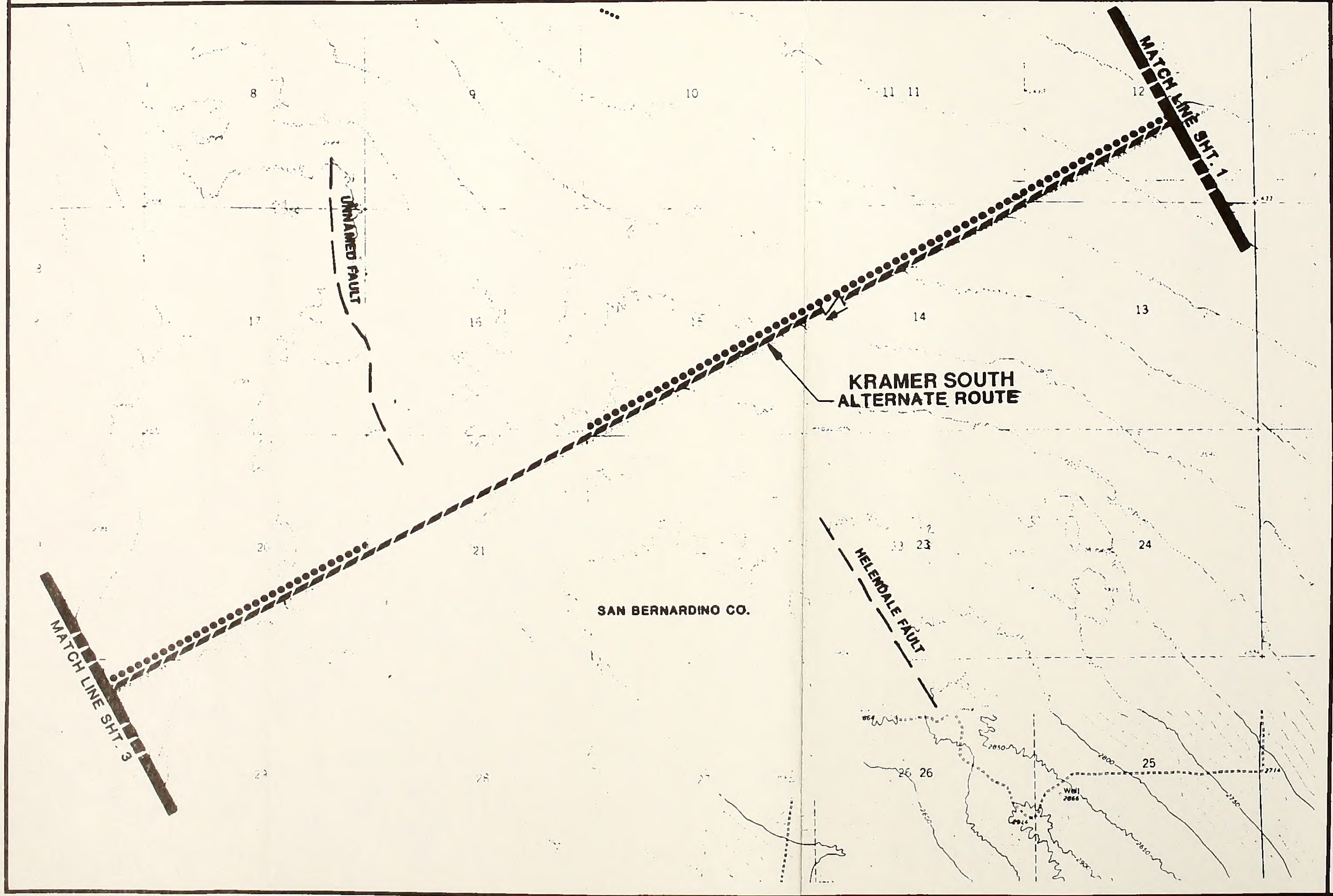
eip

90439

Key Features Along the Cajon Pipeline Route

Appendix A: Map 2 of 26

◀ Qoa ▶◀ Qal ▶◀ Qoa ▶	Soils
Helendale Fault ▼	Geology
	Hydrology
◀ DT SbS CBS ▶	Biological Resources
◀ High ▶	Paleontology
◀ BLM ▶◀ San Bernardino County ▶◀ BLM ▶	Jurisdiction
◀ OS ▶	Land Use



Legend

Proposed Pipeline	▬▬▬
Alternate Pipeline	▬ ▬ ▬ ▬
Gate Valve	⋈
Check Valve	
BLM	●●●●●●●●
City and County Boundary	— — — — —
US Forest Service	▰▰▰▰▰
Fault Trace	—— ——
LA County Flood Control	'''''''''''''''''
Areas of Minimal Flooding	ZONE C
Area of 100 Year Flood	ZONE A
Percolation Areas	▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

CAJON PIPELINE

eip

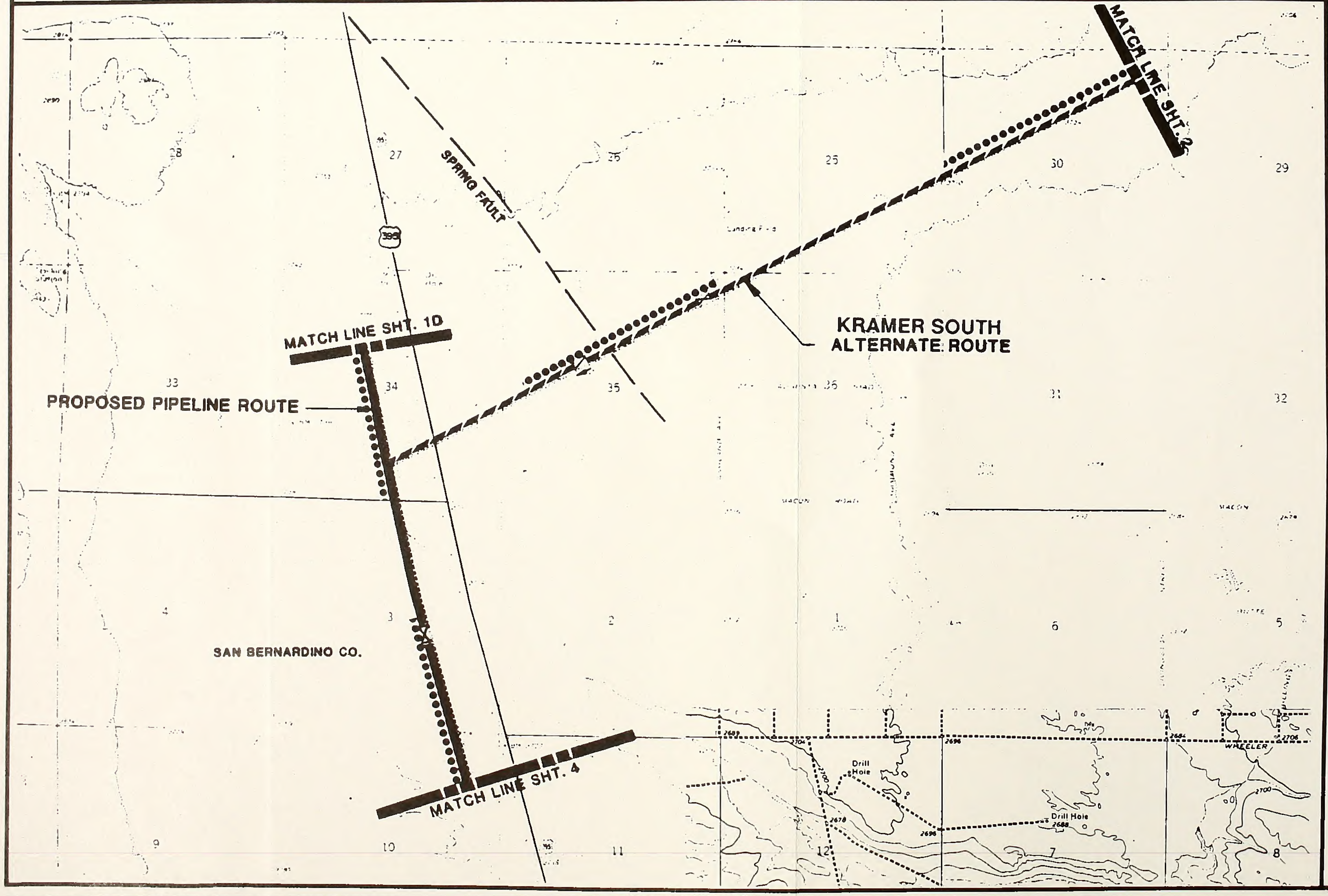
90439

Key Features Along the Canyon Pipeline Route

Key Features Along the Cajon Pipeline Route

Appendix A: Map 3 of 26

◄ Qoa, Qal ►◄ Qoa ►◄ Qal ►◄ Qoa ►	Soils
Spring Fault ▼	Geology
Buckhorn Wash ▼	Hydrology
◄ SbS CBS ►	Biological Resources
◄ High ►	Paleontology
◄ BLM/SBC ►◄ BLM ►◄ San Bernardina County ►◄ BLM ►	Jurisdiction
◄ OS ►	Land Use



Legend

Proposed Pipeline ━━━━

Alternate Pipeline ▬ ▬ ▬ ▬

Gate Valve ⋈

Check Valve

BLM ●●●●●●●●

City and County Boundary — — — — —

US Forest Service ▰▰▰▰▰

Fault Trace —— ——

LA County Flood Control ||||||||||||||||

Areas of Minimal Flooding **ZONE C**

Area of 100 Year Flood **ZONE A**

Percolation Areas ▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Mormac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

CAJON PIPELINE

eip

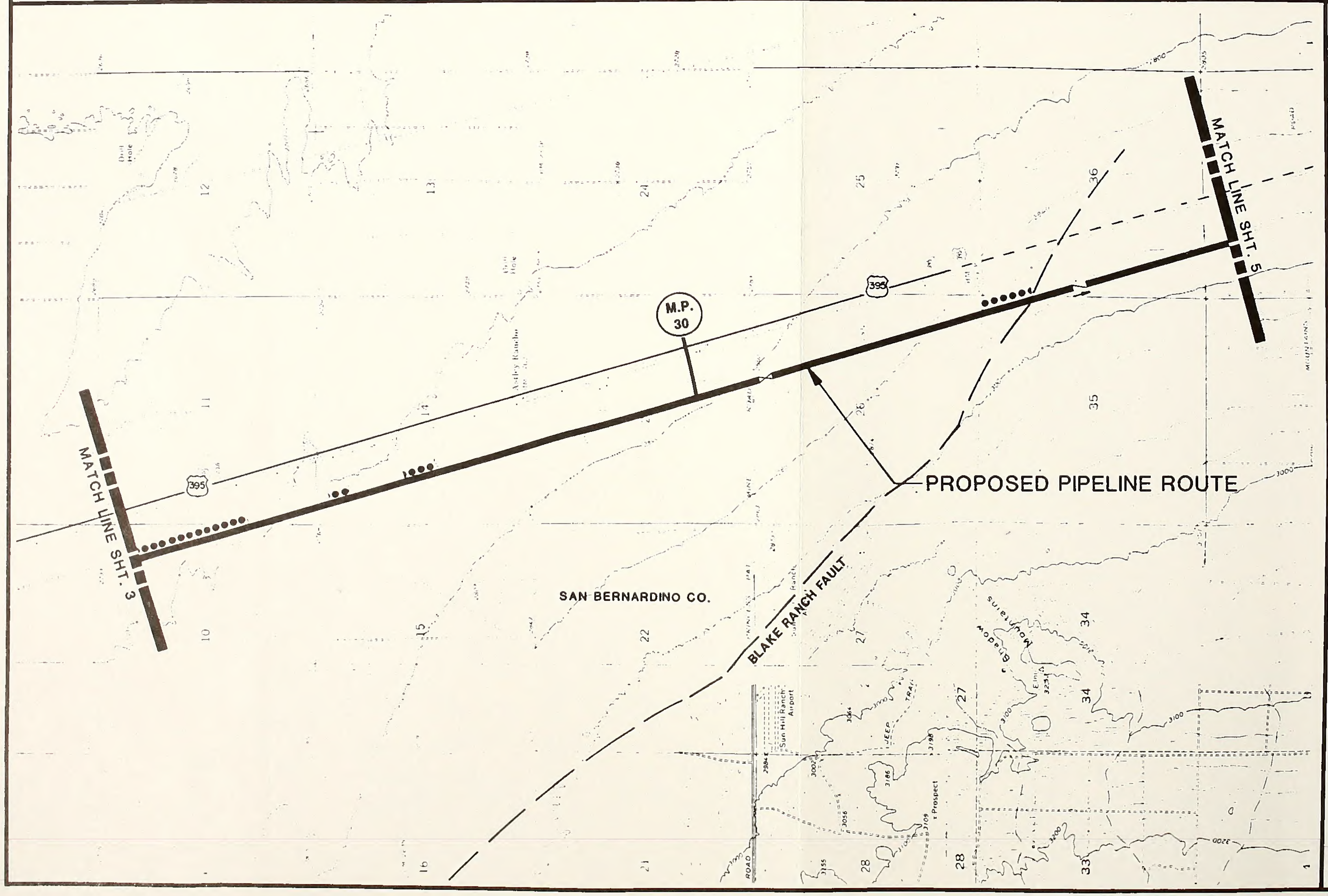
90439

Key Features Along the Cojon Pipeline Route

Key Features Along the Cajon Pipeline Route

Appendix A: Map 4 of 26

◀ Qoa ▶◀ Qal ▶	**Soils**
Blake Ranch Fault ▼	**Geology**
	Hydrology
◀ SbS CBS ▶	**Biological Resources**
◀ High ▶	**Paleontology**
◀ BLM ▶◀ SBC ▶◀ BLM ▶◀ SBC ▶◀ BLM ▶◀ San Bernardino County ◀▶ BLM ▶◀ SBC ▶	**Jurisdiction**
◀ OS ▶	**Land Use**



Legend

Proposed Pipeline ━━━━
Alternate Pipeline ▬ ▬ ▬ ▬
Gate Valve ▶◀
Check Valve
BLM ●●●●●●●●
City and County Boundary — — — —
US Forest Service ▰▰▰▰▰
Fault Trace —— ——
LA County Flood Control ||||||||||||||||
Areas of Minimal Flooding ZONE C
Area of 100 Year Flood ZONE A
Percolation Areas ▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Mormac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

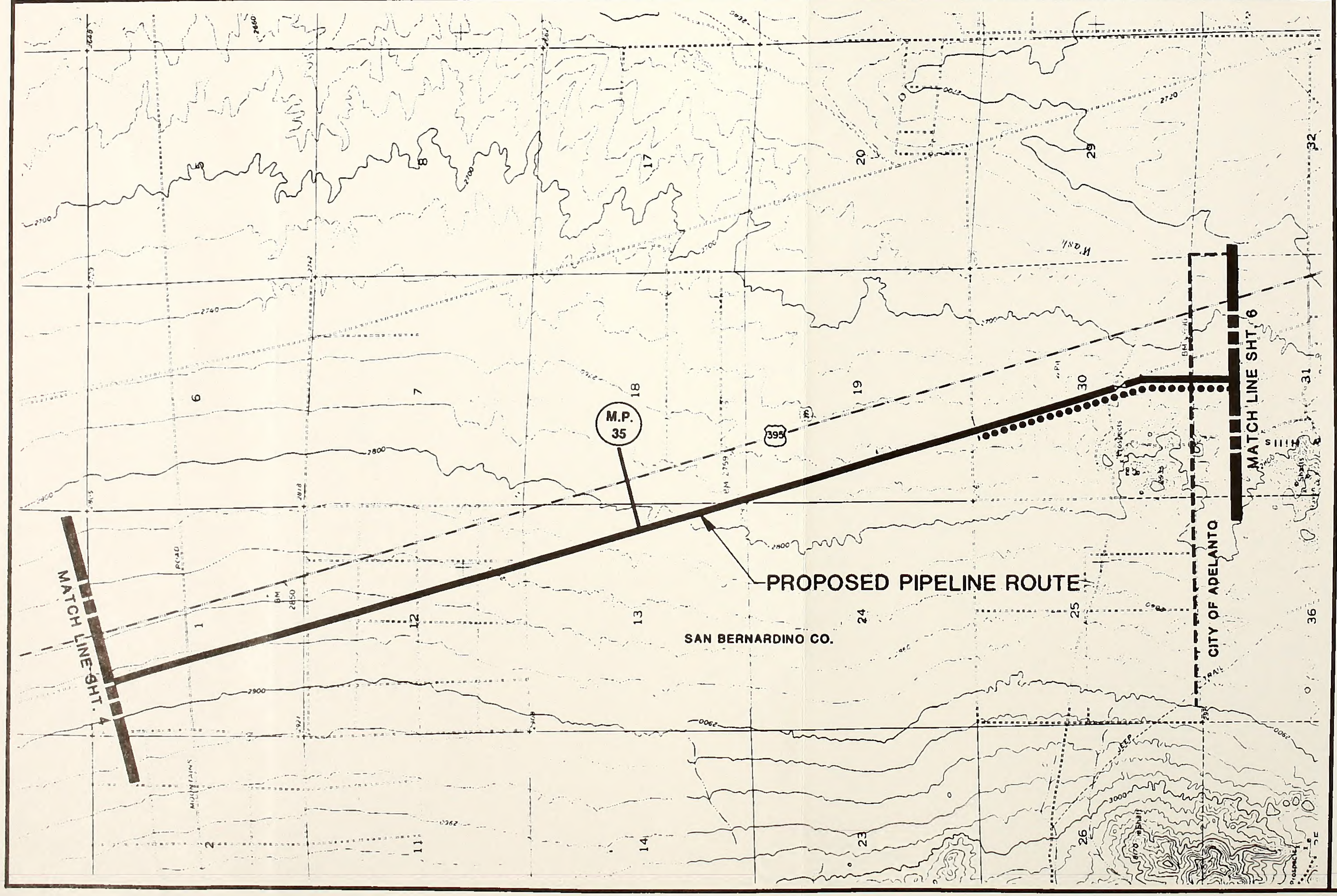
CAJON PIPELINE

eip
90439

Key Features Along the Cajon Pipeline Route

Appendix A: Map 5 of 26

◀ Qal ▶	Soils
	Geology
	Hydrology
◀ CBS JTW ▶	Biological Resources
◀ High ▶	Paleontology
◀ San Bernardino County ⋈ BLM ▶	Jurisdiction
◀ OS, R ▶	Land Use



Legend

- Proposed Pipeline ▬▬▬
- Alternate Pipeline - - - - -
- Gate Valve ⋈
- Check Valve
- BLM ●●●●●●●●
- City and County Boundary — — — —
- US Forest Service ▰▰▰▰▰
- Fault Trace —— ——
- LA County Flood Control ||||||||||||||
- Areas of Minimal Flooding ZONE C
- Area of 100 Year Flood ZONE A
- Percolation Areas ▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

CAJON PIPELINE

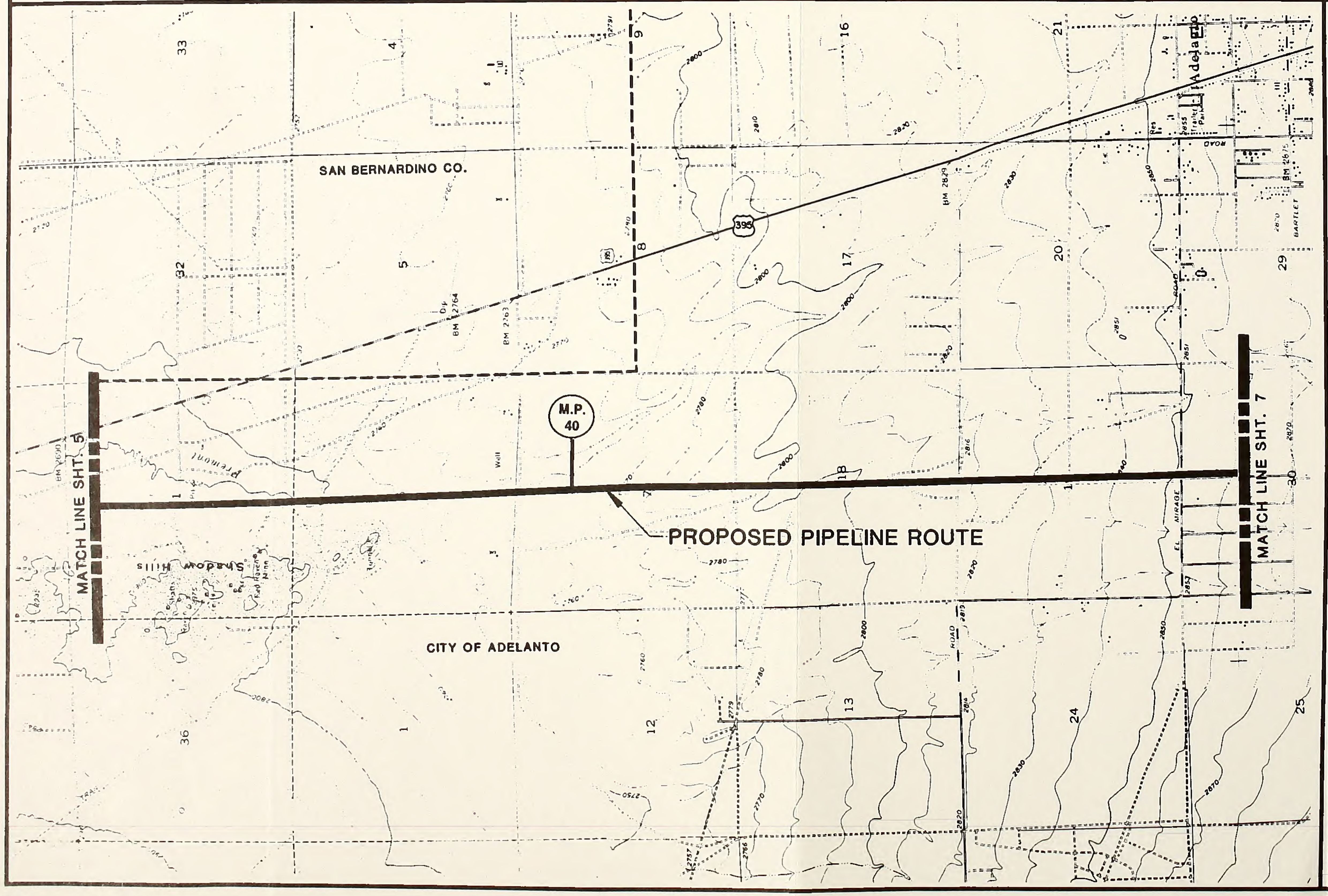
eip

90439

Key Features Along the Cajon Pipeline Route

Appendix A: Map 6 of 26

◀ Qal ▶	**Soils**
	Geology
Fremont Wash ▼	**Hydrology**
◀ JTW ▶	**Biological Resources**
◀ High ▶	**Paleontology**
◀ City of Adelanto ▶	**Jurisdiction**
◀ OS ▶◀ R ▶	**Land Use**



Legend

Proposed Pipeline	▬▬▬
Alternate Pipeline	‒ ‒ ‒ ‒
Gate Valve	⋈
Check Valve	
BLM	●●●●●●●●
City and County Boundary	‒ ‒ ‒ ‒
US Forest Service	▰▰▰▰▰
Fault Trace	— —
LA County Flood Control	ıııııııııııııııı
Areas of Minimal Flooding	ZONE C
Area of 100 Year Flood	ZONE A
Percolation Areas	▨

Scale - 1" = 2860'

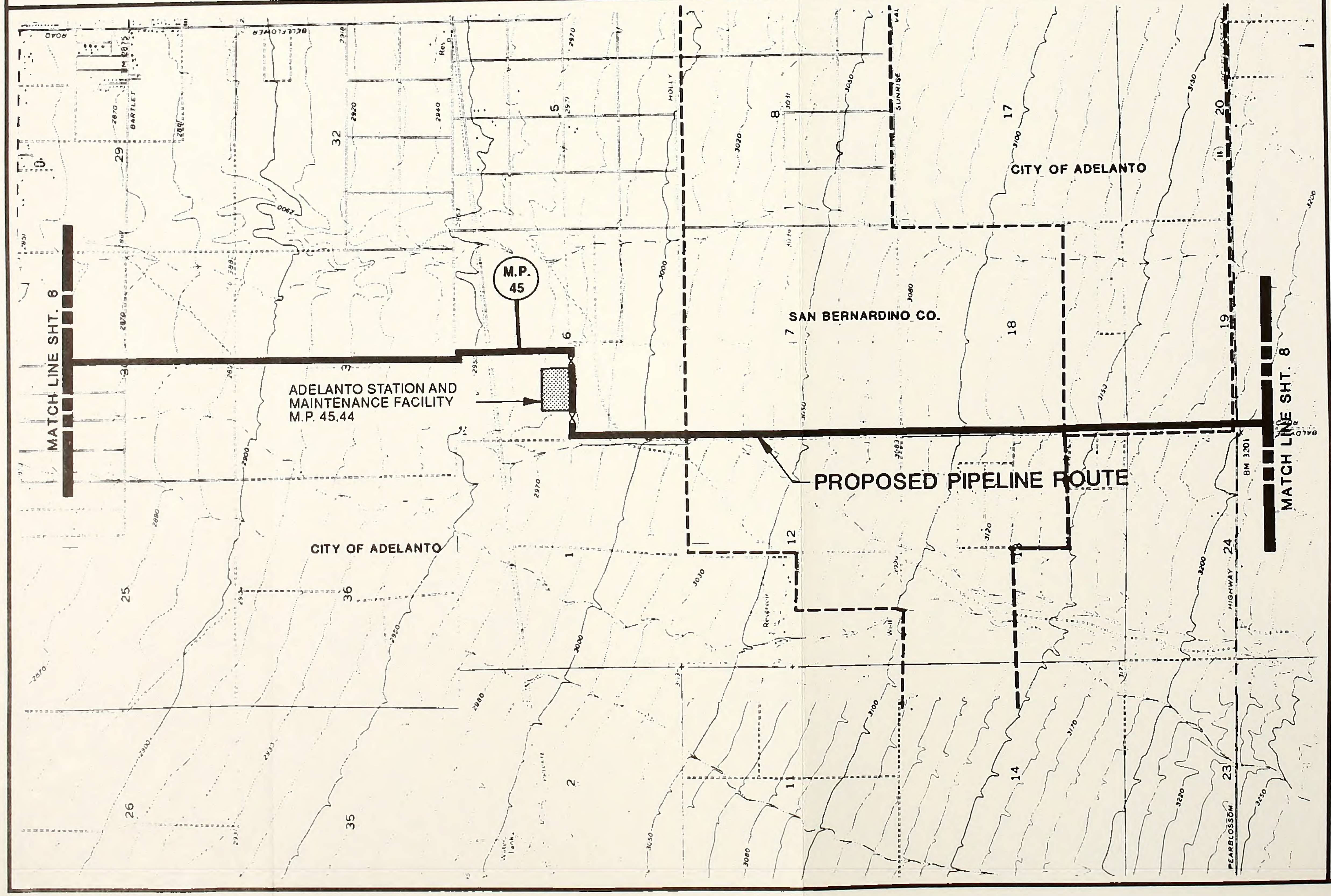
Note : Base Map USGS 7.5 minute quadrangle(s) produced by Mormac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

CAJON PIPELINE

90439

Key Features Along the Cajon Pipeline Route

◀ Qal ▶	Soils
	Geology
	Hydrology
◀ JTW ▶	Biological Resources
◀ High ▶	Paleontology
◀ City of Adelanto ▶◀ San Bernardino County ▶◀ City of Adelanto ▶	Jurisdiction
◀ OS, R ▶	Land Use



Legend

Proposed Pipeline ▬▬▬

Alternote Pipeline - - - -

Gate Volve ⋈

Check Valve

BLM ●●●●●●●●

City and County Boundory — - — -

US Forest Service

Fault Trace — —

LA County Flood Control ||||||||||||

Areas of Minimol Flooding ZONE C

Area of 100 Year Flood ZONE A

Percolotion Areas ▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quodrongle(s) produced by Mormac to information supplied by Cajon Pipeline Co. (os of 12-11-91).

CAJON PIPELINE

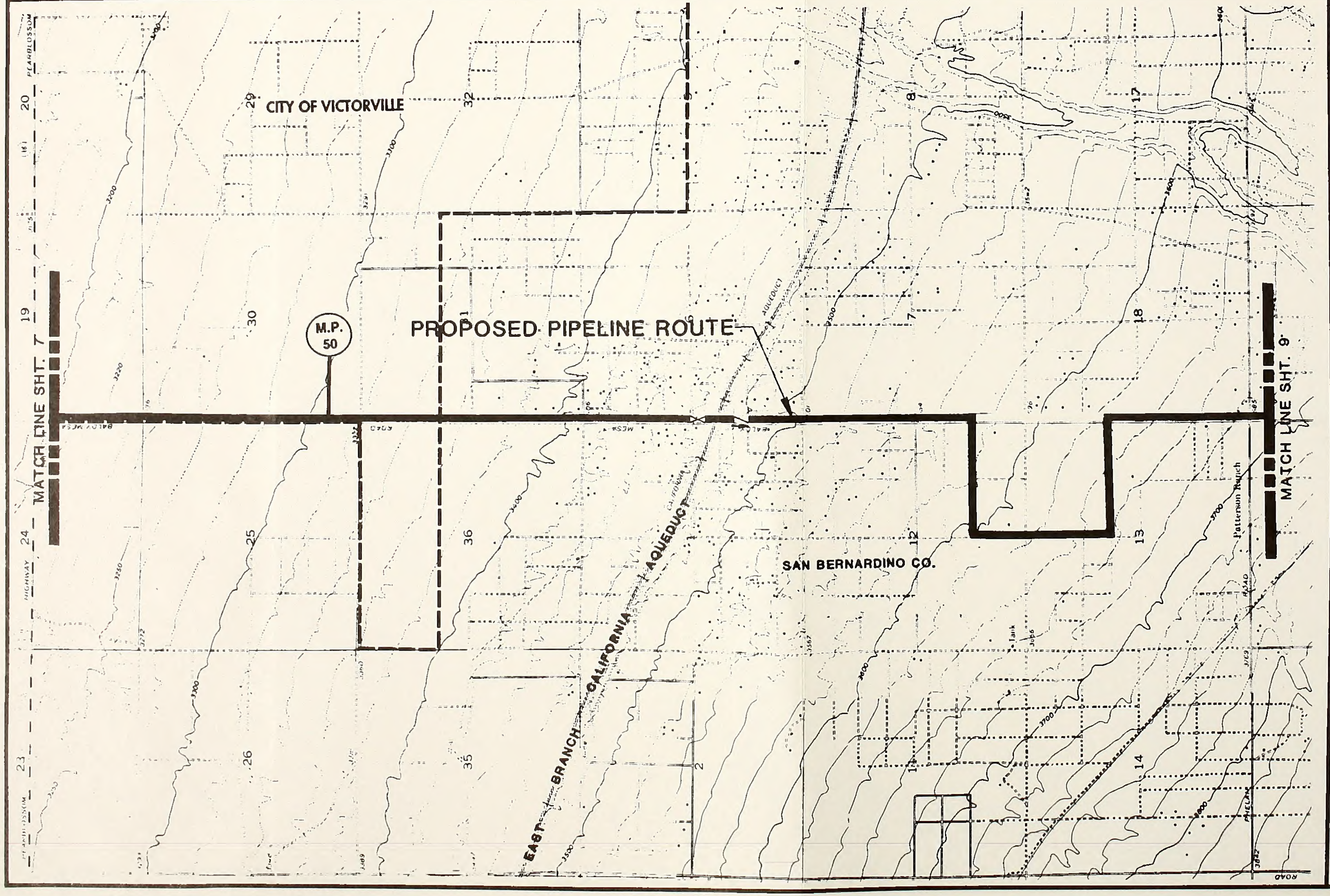
eip

90439

Key Features Along the Cajon Pipeline Route

Appendix A: Map 8 of 26

◀ Qal ▶◀ Qoa ▶	Soils
	Geology
California Aqueduct ▼	Hydrology
◀ JTW ▶	Biological Resources
◀ High ▶	Paleontology
◀ San Bernardino County ▶◀ Victorville ▶◀ San Bernardino County ▶	Jurisdiction
◀ OS, R ▶	Land Use



Legend

Proposed Pipeline ▬▬▬

Alternate Pipeline ▬ ▬ ▬

Gate Valve ⋈

Check Valve

BLM ●●●●●●●●

City and County Boundary — — — —

US Forest Service ▰▰▰▰

Fault Trace —— ——

LA County Flood Control ||||||||||||||||

Areas of Minimal Flooding ZONE C

Area of 100 Year Flood ZONE A

Percolation Areas ▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

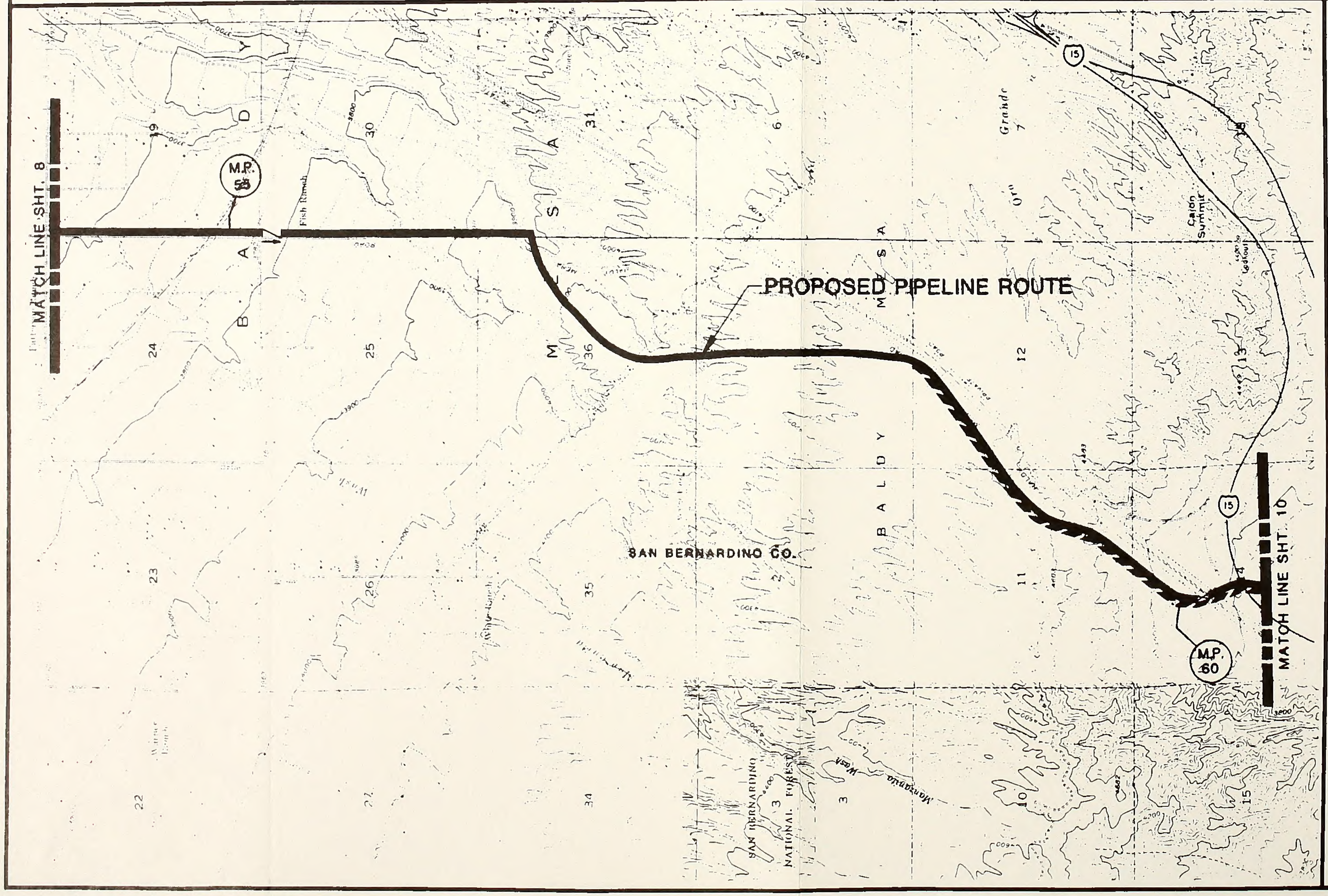
CAJON
PIPELINE

eip

90439

Key Features Along the Cajon Pipeline Route

◀ Qoa ▶◀ Qal ▶◀ Qoa ▶◀ Qal ▶	Soils
	Geology
Manzanita Wash ▼	Hydrology
◀ SDC SMC CC Bell Sage Sparrow ▶◀ SDC ▶	Biological Resources
◀ High ▶	Paleontology
◀ San Bernardino County ▶◀ USFS ▶	Jurisdiction
◀ OS, RN ▶	Land Use



Legend

Proposed Pipeline	▬▬▬
Alternate Pipeline	▬ ▬ ▬ ▬
Gate Valve	⋈
Check Valve	
BLM	●●●●●●●●
City and County Boundary	— — — —
US Forest Service	▰▰▰▰▰
Fault Trace	—— ——
LA County Flood Control	‖‖‖‖‖‖‖‖‖‖‖‖
Areas of Minimal Flooding	ZONE C
Area of 100 Year Flood	ZONE A
Percolation Areas	▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

◀A View Direction of Photo A See Section 5.6

CAJON PIPELINE

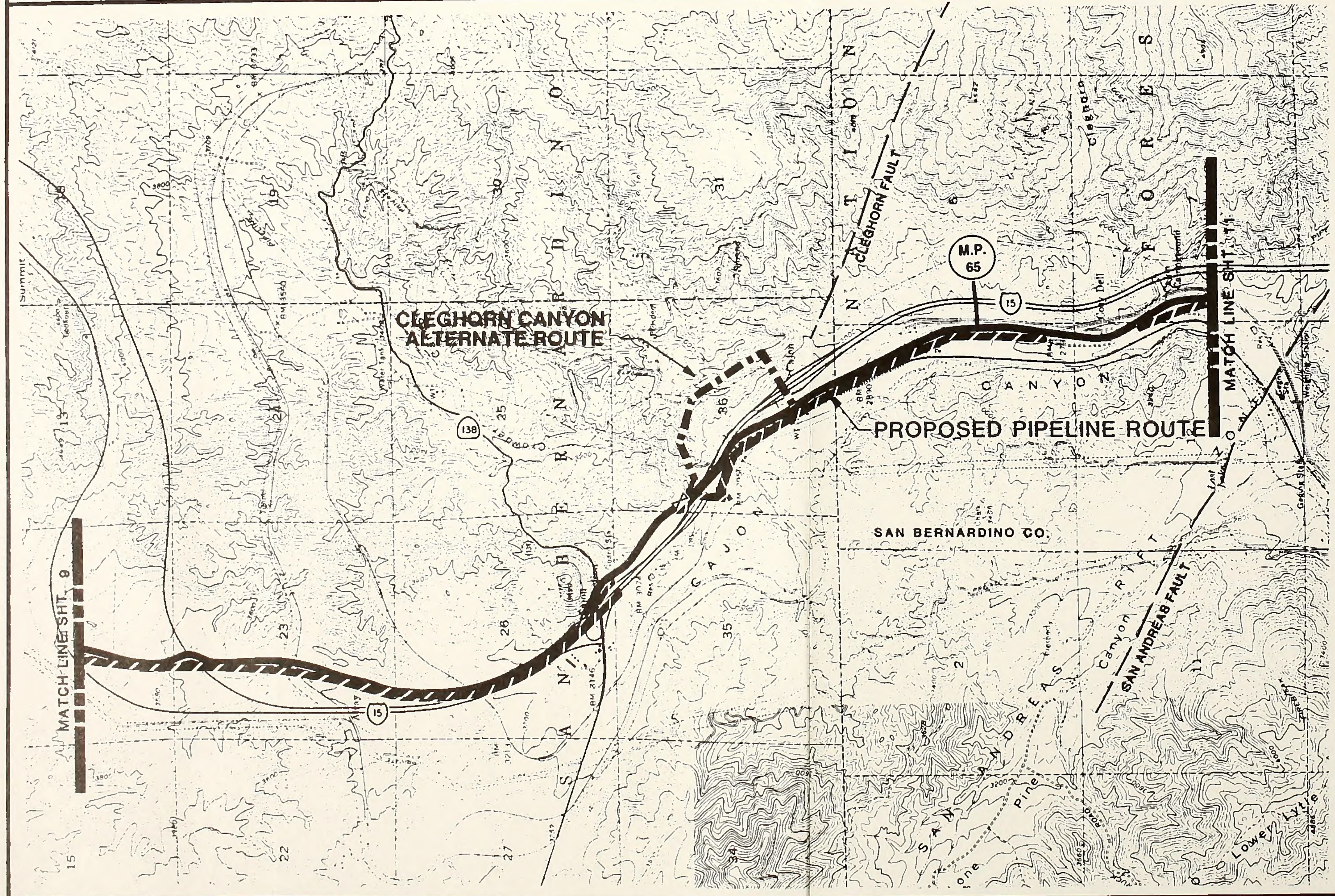
eip

90439

Key Variables Along the Object's Trajectory

Key Features Along the Cajon Pipeline Route

Soils	◀ Qal ▶◀ Qal, Mr ▶◀ Qal ▶
Geology	Cleghorn Fault ▼
Hydrology	Crowder Canyon ▼ Cleghorn Canyon ▼
Biological Resources	◀ SMC SDC SS ▶ SRS ▼ ◀ SMC SDC SS ▶
Paleontology	◀ High ▶◀ Low ▶◀ High ▶
Jurisdiction	◀ USFS ▶◀ SBC ▶◀ USFS ▶◀ SBC ▶◀ USFS ▶
Land Use	◀ OS, RN ▶



Legend

Proposed Pipeline ▬▬▬
Alternate Pipeline ▬ · ▬ · ▬
Gate Valve ⋈
Check Valve
BLM ●●●●●●●●
City and County Boundary — — — —
US Forest Service ▰▰▰▰▰
Fault Trace —— ——
LA County Flood Control ||||||||||||||||
Areas of Minimal Flooding ZONE C
Area of 100 Year Flood ZONE A
Percolation Areas ▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

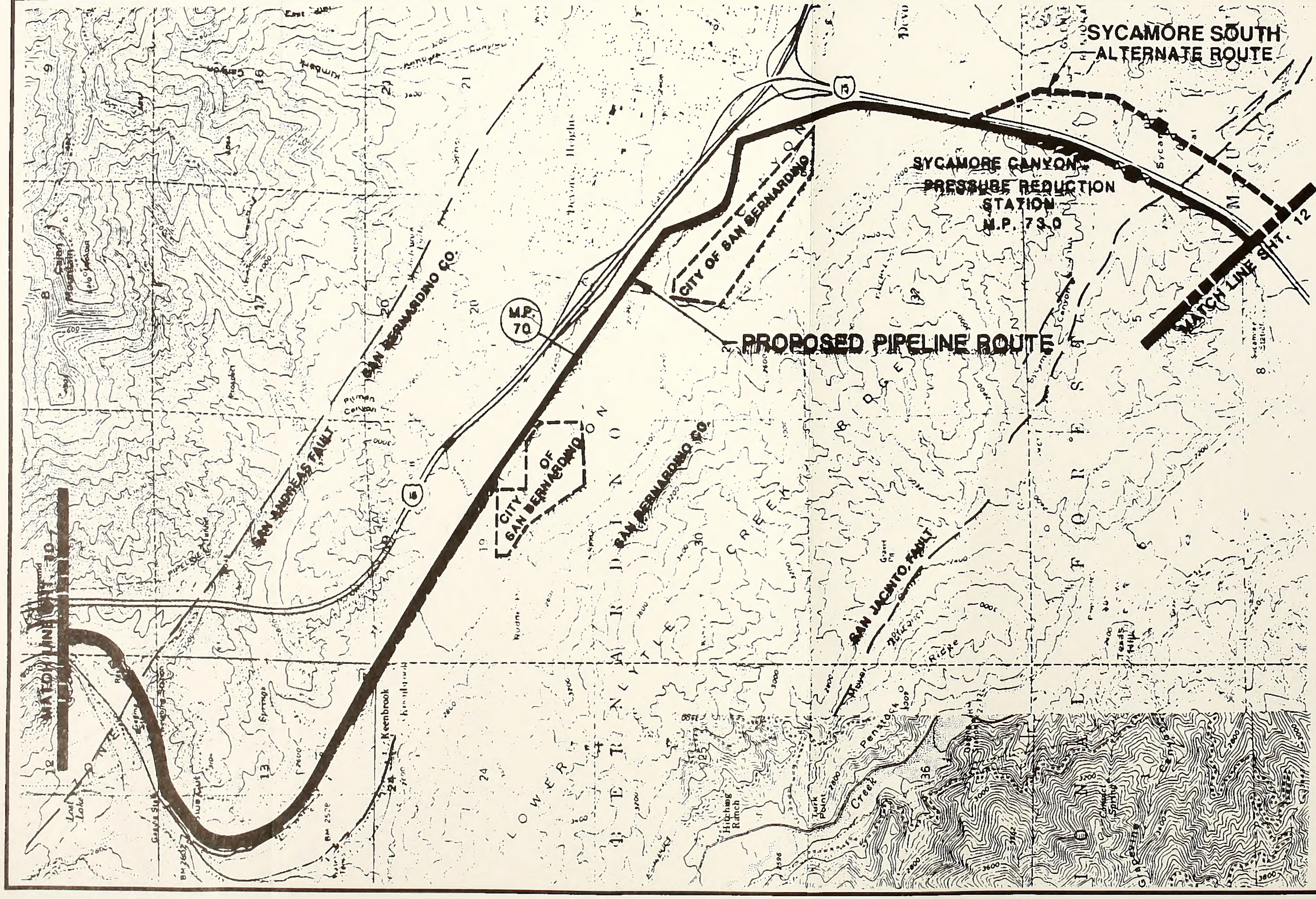
CAJON PIPELINE

eip

90439

Key Features Along the Cajon Pipeline Route

◀ Qal ▶◀ PCc ▶◀ Qal ▶◀ Gr ▶◀ Qal ▶◀ Gr ▶	**Soils**
San Andreas Fault ▼ Glen Helen Fault ▼ San Jacinto Fault ▼	**Geology**
Cajon Wash ▼ Sycamore Canyon ▼	**Hydrology**
◀ SMC SDC SS ▶	**Biological Resources**
◀ Low ▶	**Paleontology**
◀ USFS ▶◀ SBC ▶◀ USFS ▶◀ SBC ▶	**Jurisdiction**
◀ OS, R, RN ▶	**Land Use**



Legend

Proposed Pipeline ▬▬▬

Alternate Pipeline ‒ ‒ ‒ ‒

Gate Valve ⋈

Check Valve

BLM ••••••••

City and County Boundary — — — — —

US Forest Service

Fault Trace —— ——

LA County Flood Control ''''''''''''''

Areas of Minimal Flooding ZONE C

Area of 100 Year Flood ZONE A

Percolation Areas ▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

CAJON PIPELINE

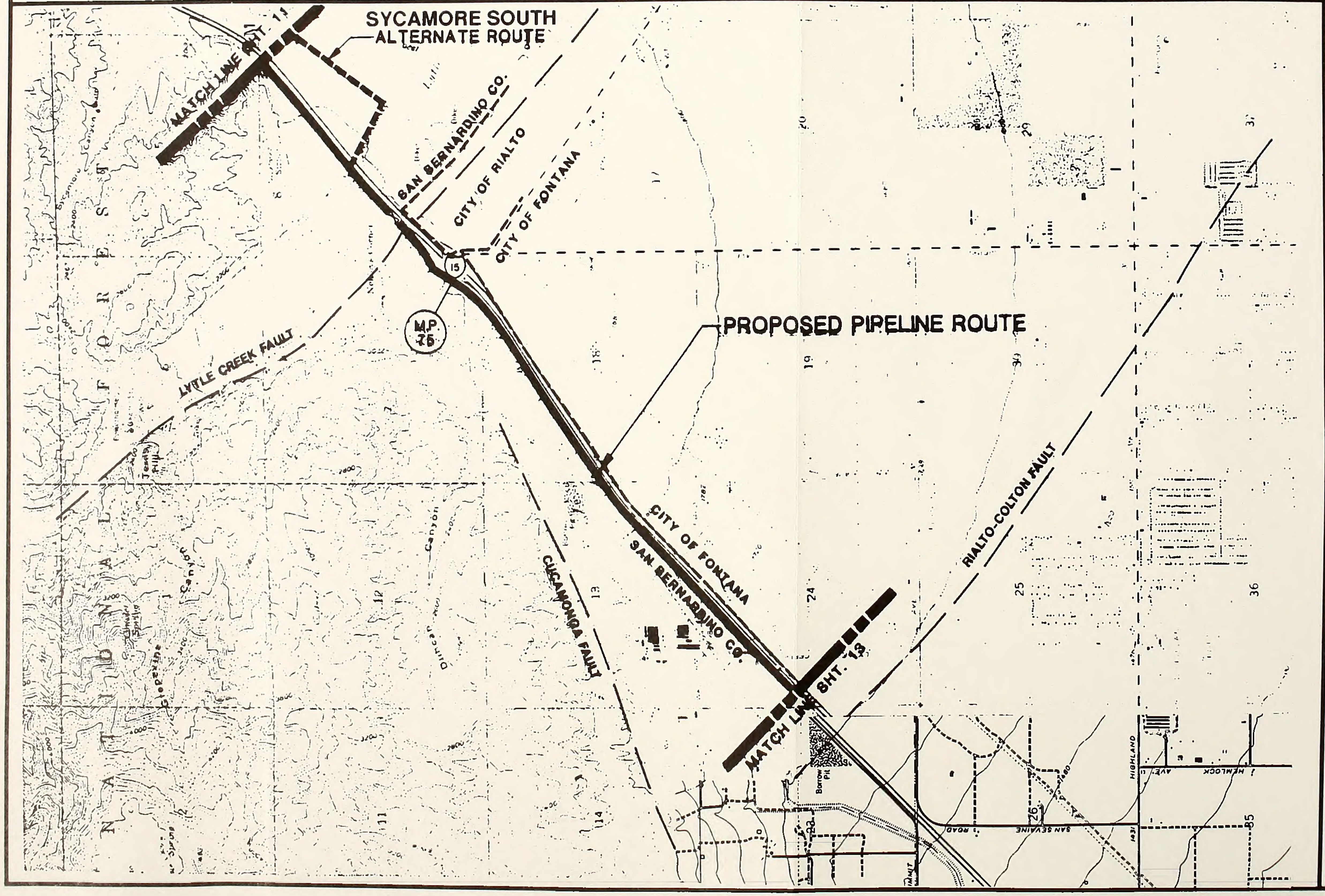
eip

90439

Key Features Along the Cajon Pipeline Route

Appendix A: Map 12 of 26

Features	
◀ Qoa ▶◀ Qal ▶	Soils
Lytle Creek Fault ▼ Cucamonga Fault ▼	Geology
Lytle Creek ▼	Hydrology
◀ UH ▶	Biological Resources
◀ Low ▶◀ High ▶◀ Low ▶◀ High	Paleontology
◀ SBC ▶	Jurisdiction
◀ OS, R ▶	Land Use



Legend

Proposed Pipeline	━━━━
Alternate Pipeline	━ ━ ━ ━
Gate Valve	⋈
Check Valve	⊏
BLM	••••••••
City and County Boundary	— — — —
US Forest Service	▰▰▰▰▰
Fault Trace	— —
LA County Flood Control	'''''''''''''''
Areas of Minimal Flooding	ZONE C
Area of 100 Year Flood	ZONE A
Percolation Areas	▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Mormac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

◀A View Direction of Photo A See Section 5.6

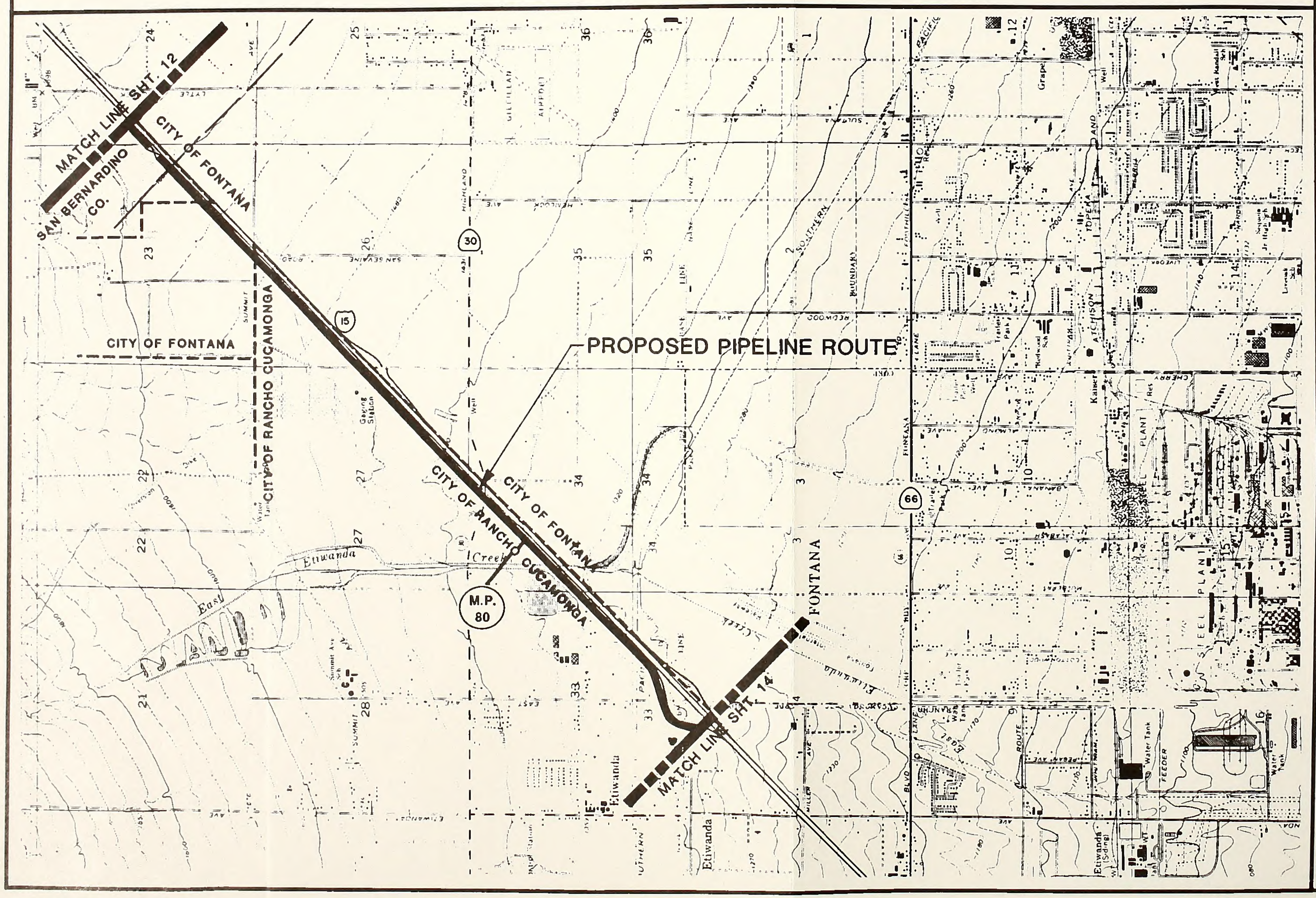
CAJON PIPELINE

eip
90439

Key Features Along the Cajon Pipeline Route

Appendix A: Map 13 of 26

◀ Qal ▶	**Soils**
Rialto-Colton Fault ▼	**Geology**
Etiwanda Creek ▼	**Hydrology**
◀ UH ▶	**Biological Resources**
◀ High ▶	**Paleontology**
◀SBC▶◀Fontana▶◀ City of Rancho Cucamonga ▶	**Jurisdiction**
◀ OS, A ▶	**Land Use**



Legend

Proposed Pipeline	▬▬▬
Alternate Pipeline	▬ ▬ ▬
Gate Valve	⋈
Check Valve	
BLM	●●●●●●●●
City and County Boundary	— — — —
US Forest Service	▰▰▰▰
Fault Trace	—— ——
LA County Flood Control	|||||||||||||
Areas of Minimal Flooding	ZONE C
Area of 100 Year Flood	ZONE A
Percolation Areas	▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

CAJON PIPELINE

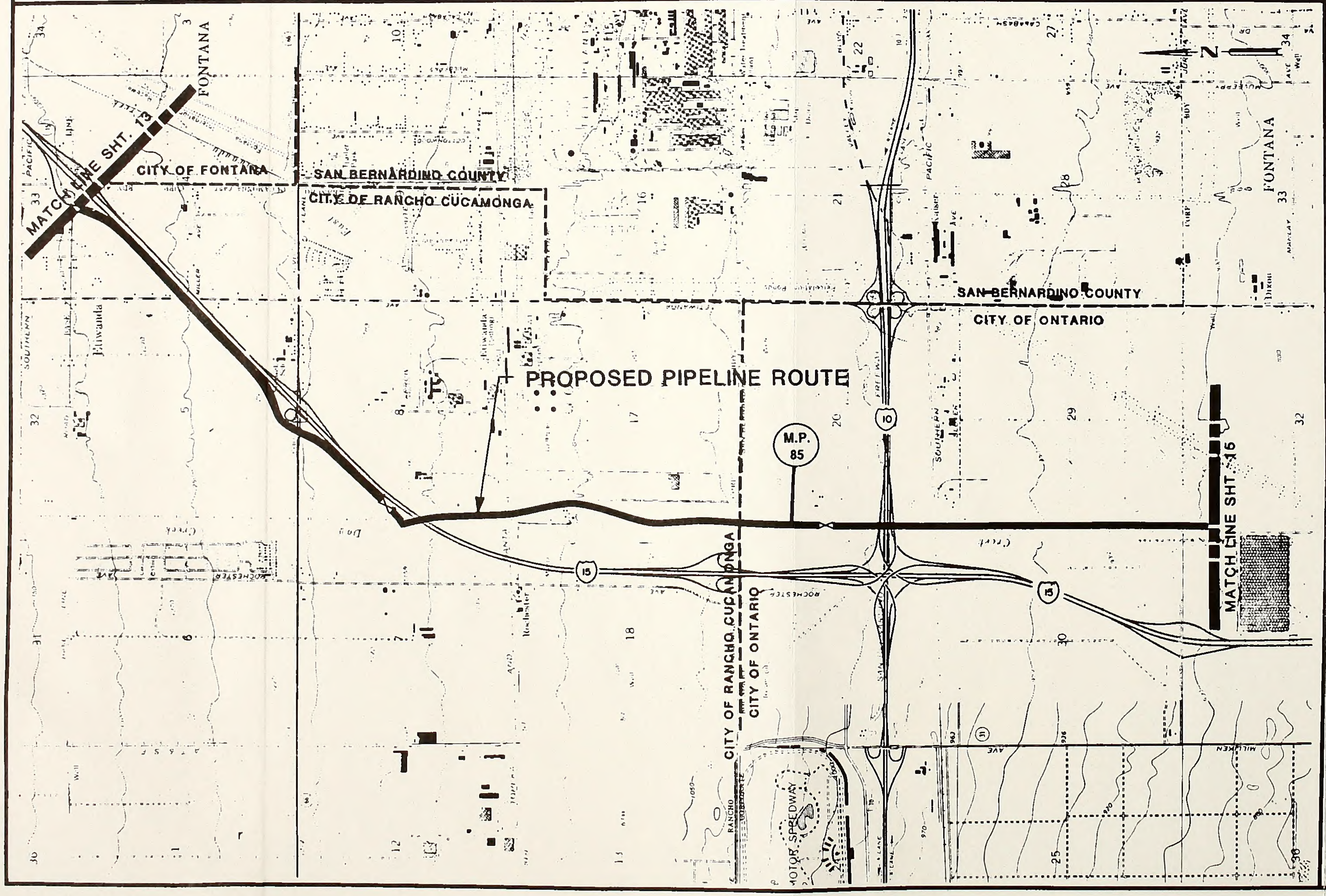
eip

90439

Key Features Along the Cajon Pipeline Route

Appendix A: Map 14 of 26

◀ Qal ▶	Soils
	Geology
Day Creek ▼	Hydrology
◀ UH ▶	Biological Resources
◀ High ▶	Paleontology
◀ City of Rancho Cucamonga ▶◀ City of Ontario ▶	Jurisdiction
◀ OS, A ▶	Land Use



Legend

- Proposed Pipeline ━━━━
- Alternate Pipeline ━ ━ ━ ━
- Gate Valve ⋈
- Check Valve
- BLM ●●●●●●●●
- City and County Boundary — — — —
- US Forest Service ▰▰▰▰▰
- Fault Trace —— ——
- LA County Flood Control ||||||||||||||||
- Areas of Minimal Flooding ZONE C
- Area of 100 Year Flood ZONE A
- Percolation Areas ▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

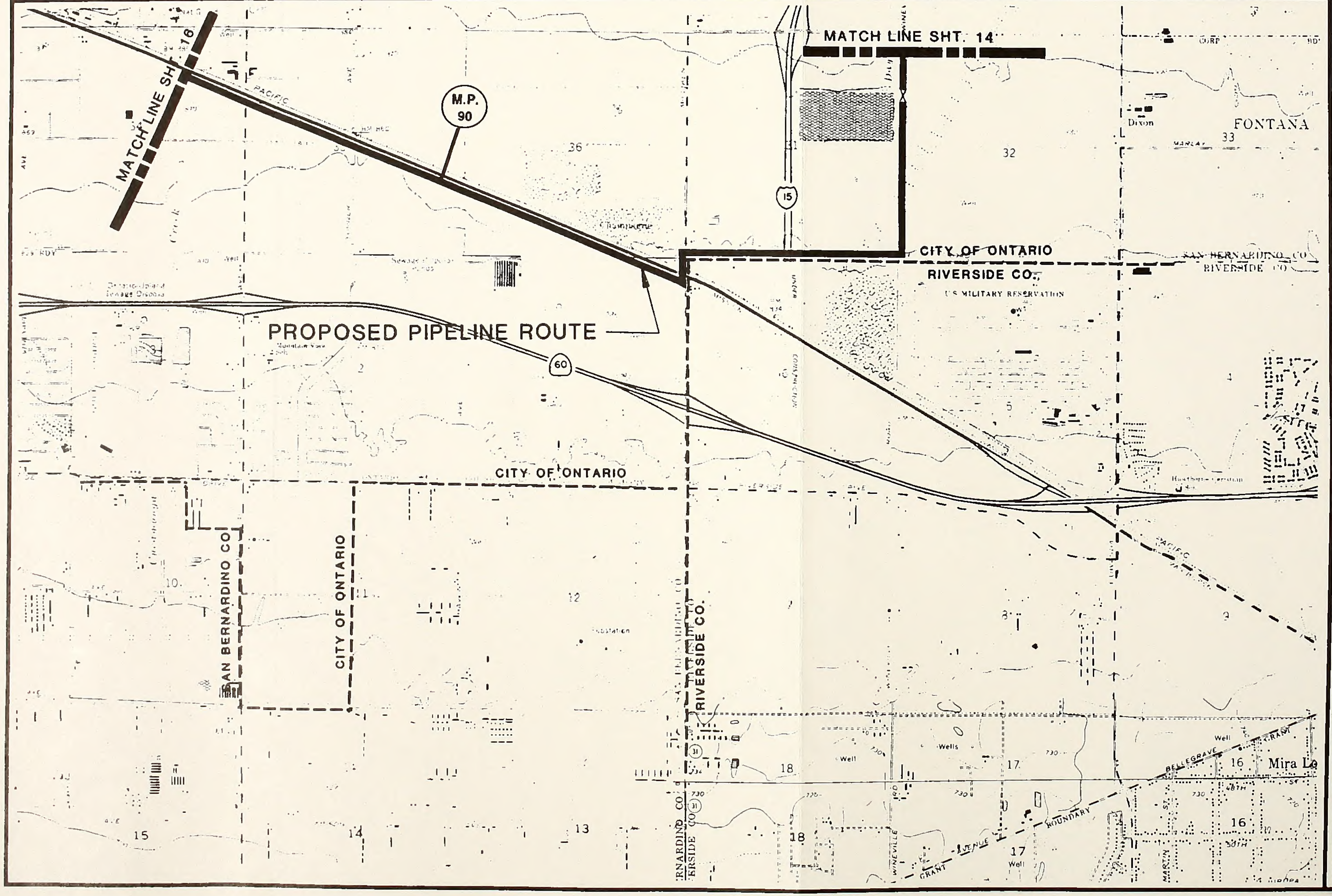
CAJON PIPELINE

eip

90439

Key Features Along the Cajon Pipeline Route

◀ Qal ▶	Soils
	Geology
Cucamonga Creek ▼	Hydrology
◀ UH ▶	Biological Resources
◀ High ▶	Paleontology
◀ City of Ontario ▶	Jurisdiction
◀ OS, A ▶	Land Use



Legend

Proposed Pipeline ▬▬▬

Alternate Pipeline ▬ ▬ ▬

Gate Valve ⋈

Check Valve

BLM ●●●●●●●●

City and County Boundary — — — —

US Forest Service

Fault Trace — —

LA County Flood Control ┆┆┆┆┆┆┆┆┆┆

Areas of Minimal Flooding ZONE C

Area of 100 Year Flood ZONE A

Percolation Areas ▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Mormac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

CAJON PIPELINE

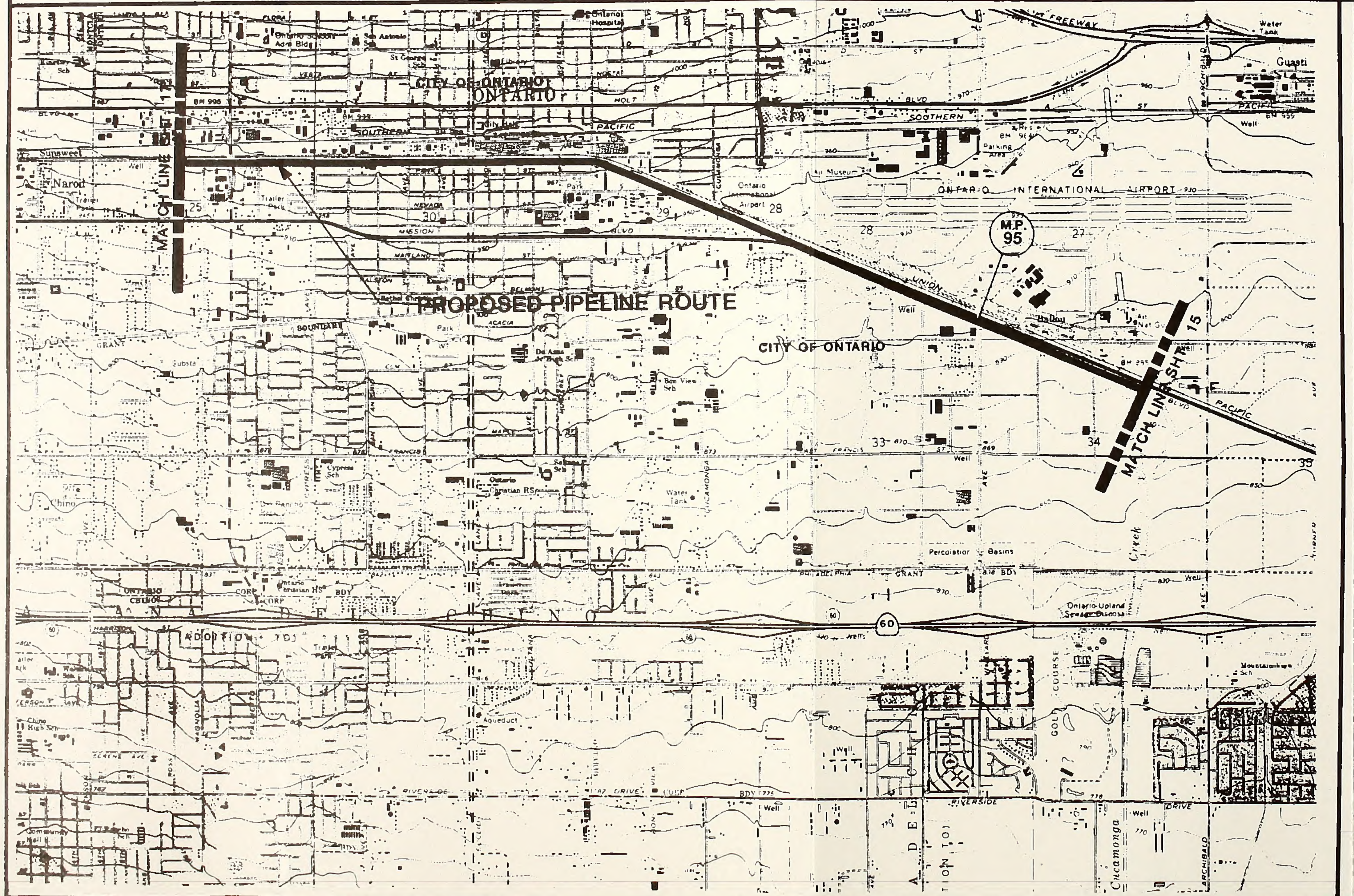
eip

90439

Key Features Along the Cajon Pipeline Route

Appendix A: Map 16 of 26

◄ Qal ►	Soils
	Geology
Day Creek ▼	Hydrology
◄ UH ►	Biological Resources
◄ High ►	Paleontology
◄ City of Ontario ►	Jurisdiction
◄ I ►	Land Use



Legend

Proposed Pipeline	━━━━
Alternate Pipeline	▬ ▬ ▬ ▬
Gate Valve	⋈
Check Valve	⊏
BLM	●●●●●●●●
City and County Boundary	— - — - —
US Forest Service	▰▰▰▰▰
Fault Trace	—— ——
LA County Flood Control	❘❘❘❘❘❘❘❘❘❘❘❘❘❘
Areas of Minimal Flooding	ZONE C
Area of 100 Year Flood	ZONE A
Percolation Areas	▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

CAJON
PIPELINE

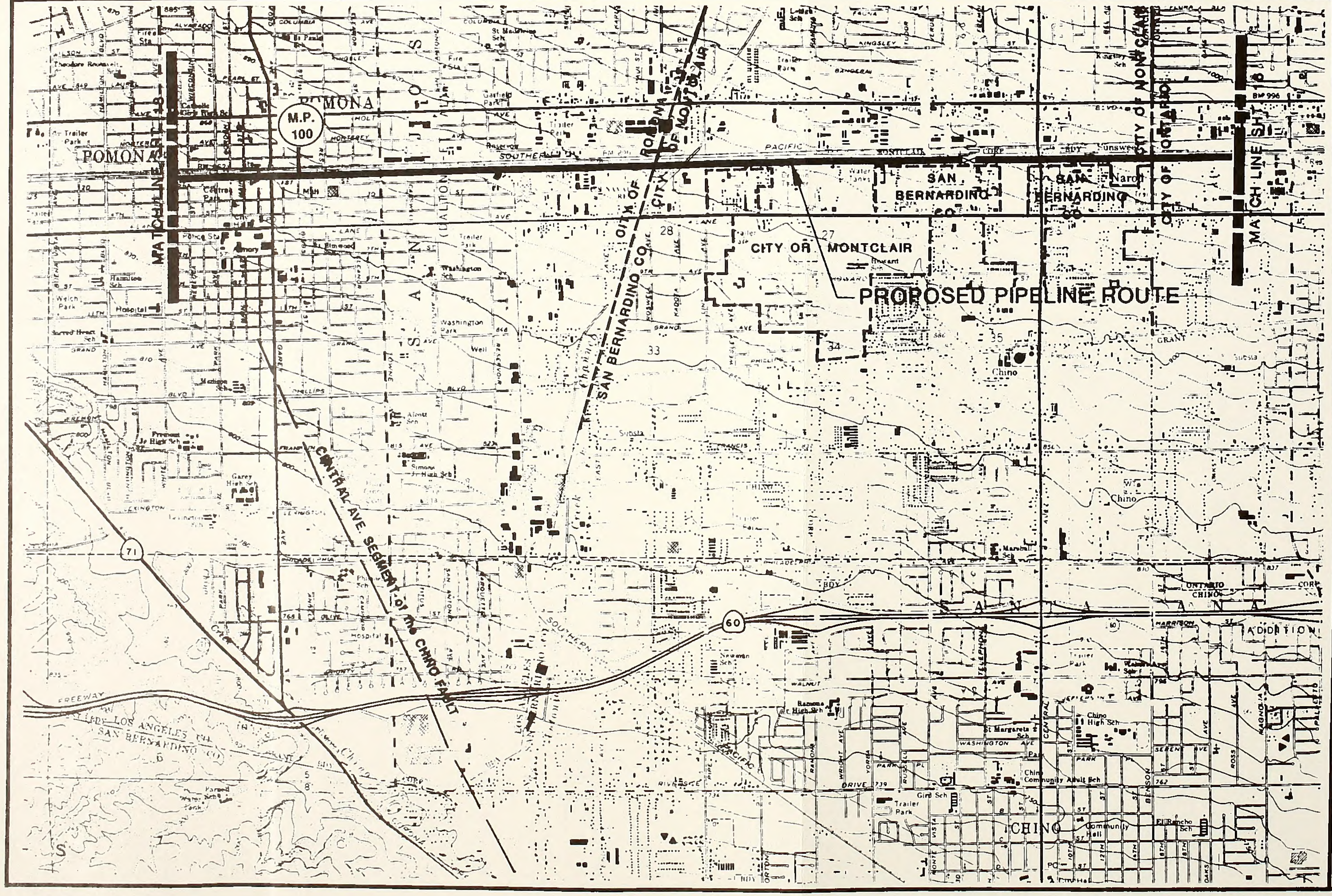
eip

90439

Key Features Along the Cajon Pipeline Route

Appendix A: Map 17 of 26

◀ Qal ▶	**Soils**
	Geology
San Antonio Creek ▼	**Hydrology**
◀ UH ▶	**Biological Resources**
◀ High ▶	**Paleontology**
◀ City of Pomona ▶◀ City of Montclair ▶◀ City of Ontario	**Jurisdiction**
◀ R, C, I ▶◀ C, I ▶◀ I ▶	**Land Use**



Legend

Proposed Pipeline	▬▬▬
Alternate Pipeline	▬ ▬ ▬
Gate Valve	▶◀
Check Valve	
BLM	••••••••
City and County Boundary	— — — —
US Forest Service	▰▰▰▰
Fault Trace	—— ——
LA County Flood Control	'''''''''''''''
Areas of Minimal Flooding	ZONE C
Area of 100 Year Flood	ZONE A
Percolation Areas	▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

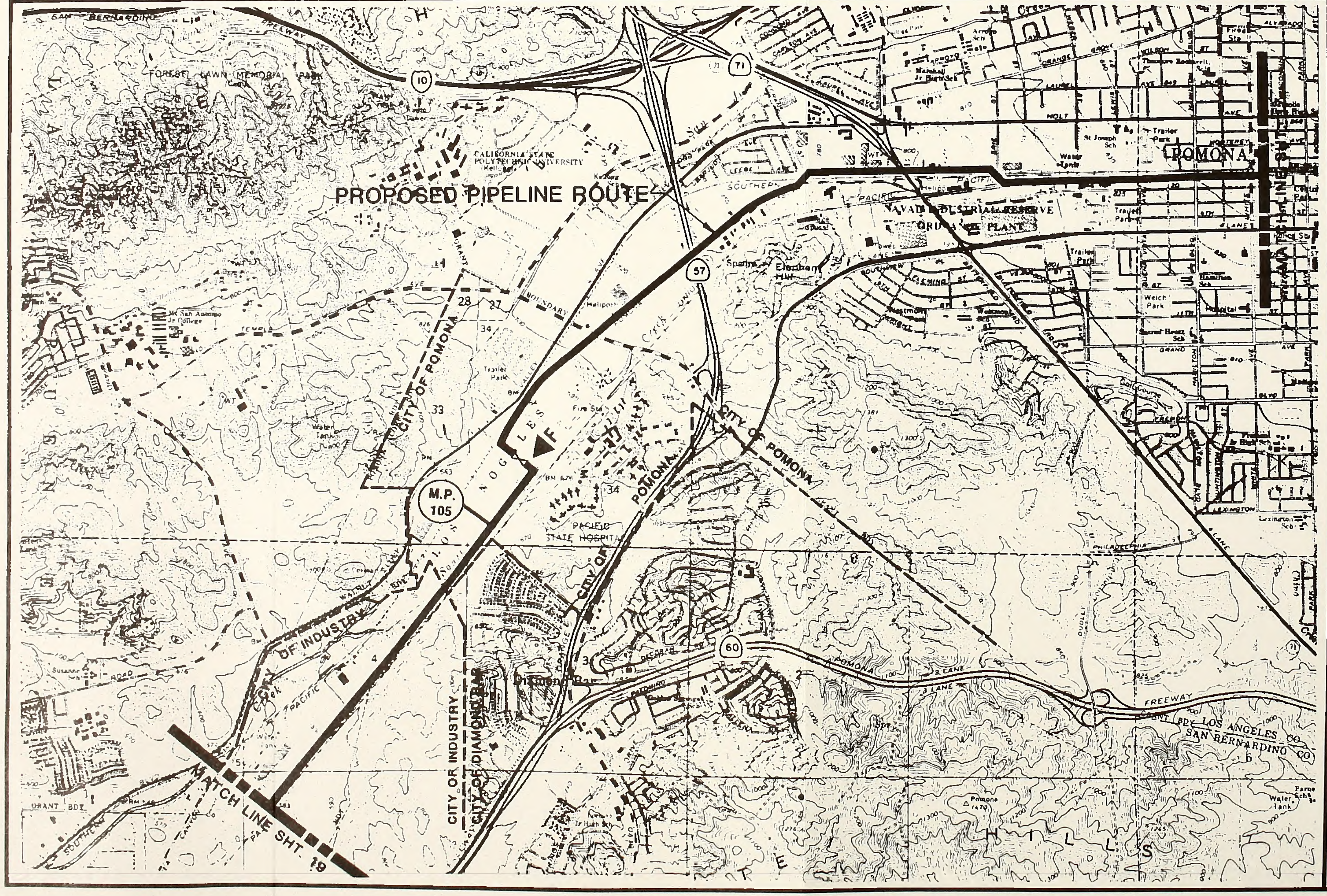
CAJON PIPELINE

eip

90439

Key Features Along the Cajon Pipeline Route

Soils	◀ Qal ▶
Geology	
Hydrology	San Jose Creek ▼
Biological Resources	◀ UH ▶
Paleontology	◀ High ▶◀ Low ▶◀ High ▶
Jurisdiction	◀ City of Industry ▶◀ City of Pomona ▶
Land Use	◀ OS ▶◀ OS, I, C, R ▶



Legend

Proposed Pipeline	▬▬▬
Alternate Pipeline	▬ ▬ ▬
Gate Valve	⋈
Check Valve	⊏
BLM	●●●●●●●●
City and County Boundary	— — — —
US Forest Service	▰▰▰▰
Fault Trace	—— ——
LA County Flood Control	┆┆┆┆┆┆┆┆
Areas of Minimal Flooding	ZONE C
Area of 100 Year Flood	ZONE A
Percolation Areas	▨

Scale - 1" = 2860'

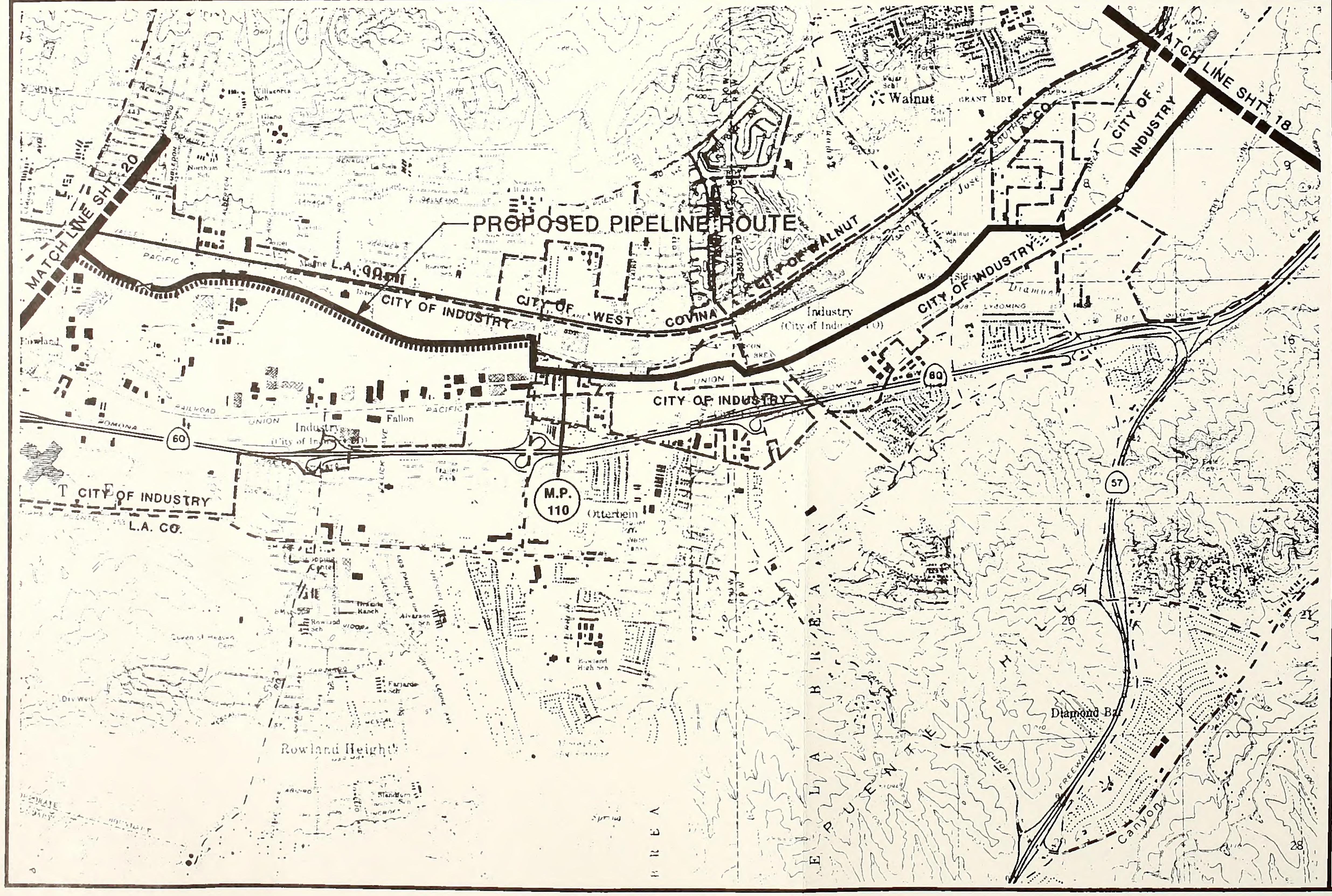
Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

◀A View Direction of Photo A See Section 5.6

CAJON PIPELINE

eip

Soils	◀ Qal ▶
Geology	
Hydrology	Diamond Bar Creek ▼
Biological Resources	◀ UH ▶
Paleontology	◀ Low ▶◀ High ▶
Jurisdiction	◀ City of Industry ▶◀ LA County ▶◀ City of Industry ▶◀ LA County ▶◀ City of Industry ▶
Land Use	◀ PS, C, I ▶



Legend

Proposed Pipeline	━━━━
Alternate Pipeline	━ ━ ━ ━
Gate Valve	⋈
Check Valve	
BLM	●●●●●●●●
City and County Boundary	— — - — - —
US Forest Service	▰▰▰▰▰▰
Fault Trace	—— ——
LA County Flood Control	▮▮▮▮▮▮▮▮▮
Areas of Minimal Flooding	ZONE C
Area of 100 Year Flood	ZONE A
Percolation Areas	▨

Scale - 1" = 2860'

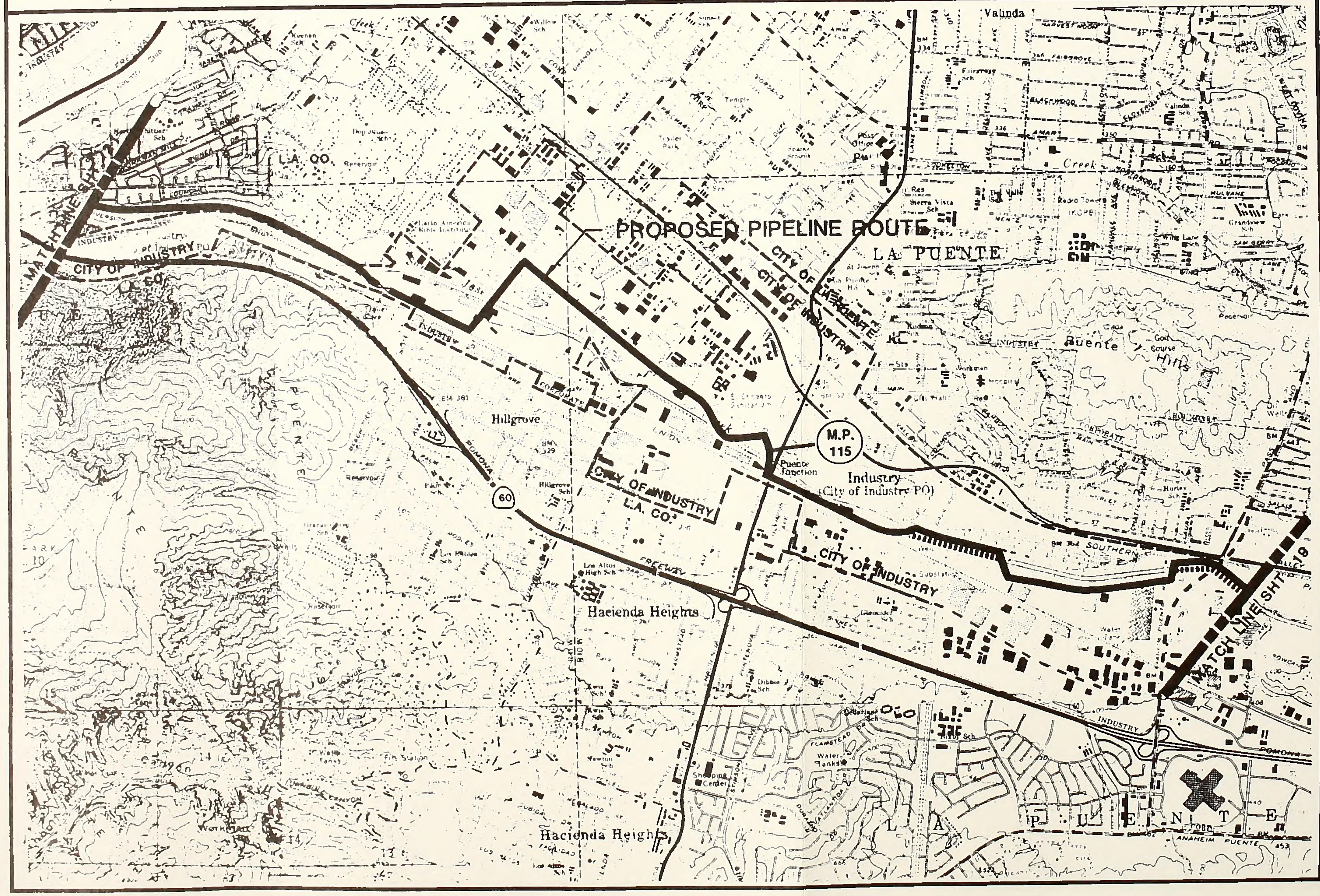
Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

CAJON
PIPELINE

eip

Key Features Along the Cajon Pipeline Route

◀ Qal ▶	Soils
	Geology
San Jose Creek ▼	Hydrology
◀ UH ▶	Biological Resources
◀ High ▶◀ Low ▶	Paleontology
◀ LA County ▶◀ City of Industry ▶	Jurisdiction
◀ OS, FC ▶◀ C, I ▶	Land Use



Legend

Proposed Pipeline	▬▬▬
Alternate Pipeline	▬ ▬ ▬ ▬
Gate Valve	⋈
Check Valve	⊣
BLM	••••••••
City and County Boundary	— — — — —
US Forest Service	▰▰▰▰▰
Fault Trace	—— ——
LA County Flood Control	⁞⁞⁞⁞⁞⁞⁞⁞⁞
Areas of Minimal Flooding	ZONE C
Area of 100 Year Flood	ZONE A
Percolation Areas	▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

CAJON PIPELINE

eip

90439

Key Features Along the Cajon Pipeline Route

Appendix A: Map 21 of 26

Soils: ◀ Qal ▶

Geology:

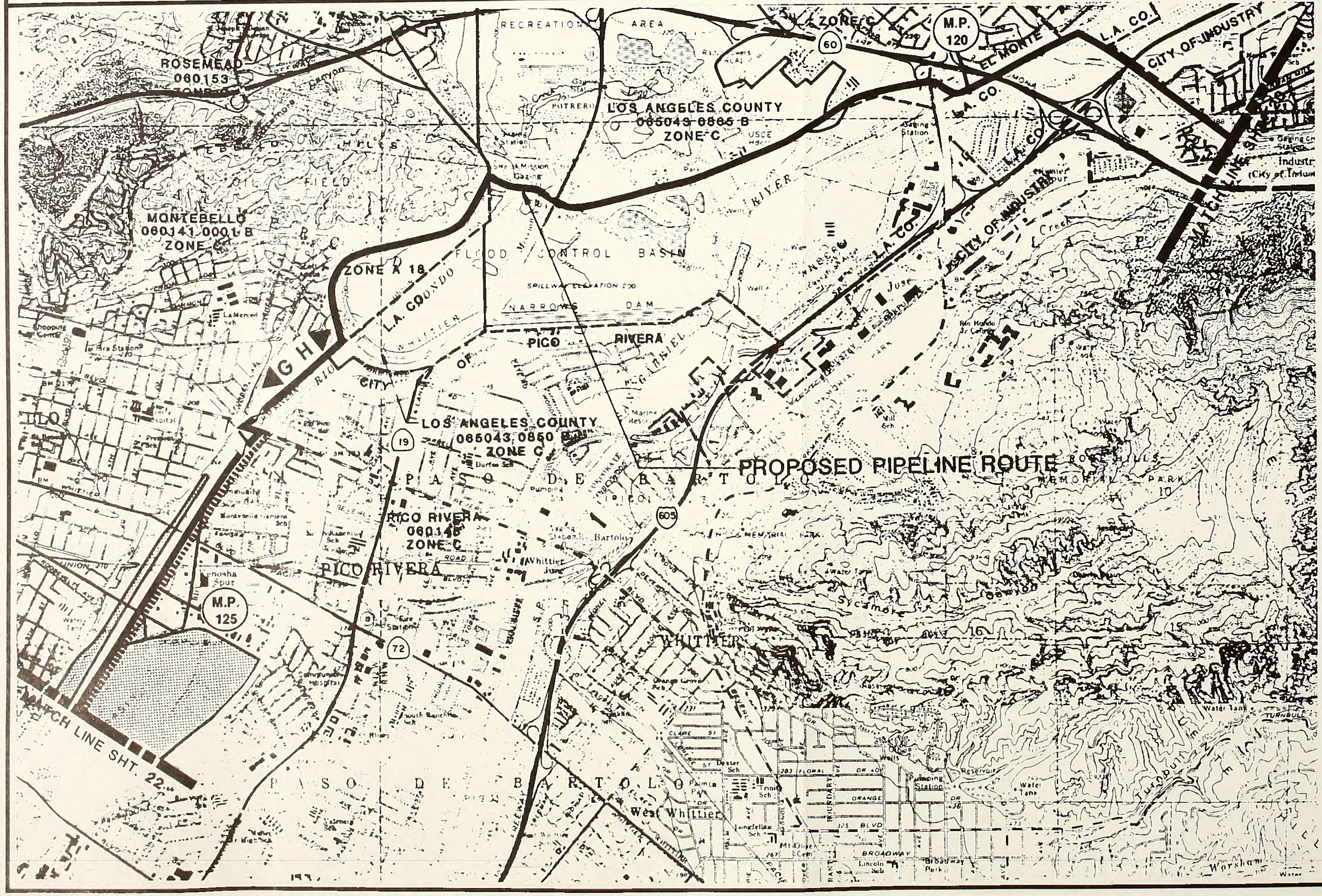
Hydrology: Whittier Dam ▼ · Rio Hondo ▼ · San Gabriel Riv ▼

Biological Resources: ◀ UH ▶ · RS ▼ · ◀ UH ▶◀ SRS ▶

Paleontology: ◀ Low ▶◀ High ▶

Jurisdiction: ◀ City of Montebello ▶◀ Los Angeles County ▶◀ City of South El Monte ▶◀ Los Angeles County ▶

Land Use: ◀ OS, R ▶◀ RN, FC ▶◀ C, I ▶◀ R, RN, OS ▶



Legend

Proposed Pipeline ▬▬▬

Alternate Pipeline - - - -

Gate Valve ⋈

Check Valve

BLM ••••••••

City and County Boundary — — — —

US Forest Service ▰▰▰▰

Fault Trace —— ——

LA County Flood Control ||||||||||||

Areas of Minimal Flooding ZONE C

Area of 100 Year Flood ZONE A

Percolation Areas ▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

◀A View Direction of Photo A See Section 5.6

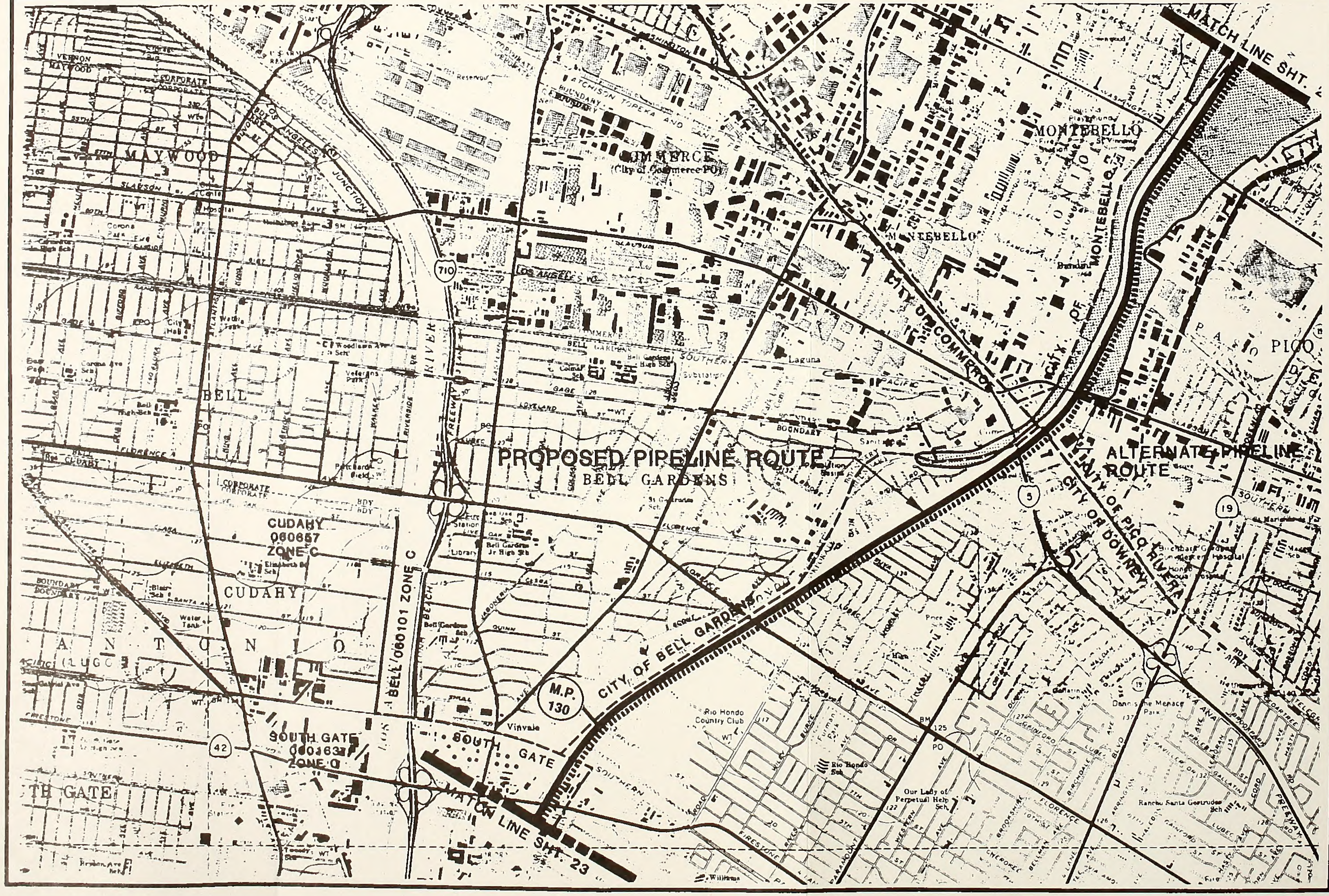
CAJON PIPELINE

eip

Key Features Along the Cajon Pipeline Route

Appendix A: Map 22 of 26

Qal				**Soils**
				Geology
Rio Hondo				**Hydrology**
UH				**Biological Resources**
Low				**Paleontology**
City of South Gate	City of Downey	City of Pico Rivera	City of Montebello	**Jurisdiction**
I, RN, FC	R, RN, FC	R, PS	R, OS	**Land Use**



Legend

Proposed Pipeline ━━━━
Alternate Pipeline ━ ━ ━ ━
Gate Valve ⋈
Check Valve
BLM ●●●●●●●●
City and County Boundary — — — — —
US Forest Service
Fault Trace —— ——
LA County Flood Control ||||||||||||||
Areas of Minimal Flooding ZONE C
Area of 100 Year Flood ZONE A
Percolation Areas ▨

Scale - 1" = 2860'

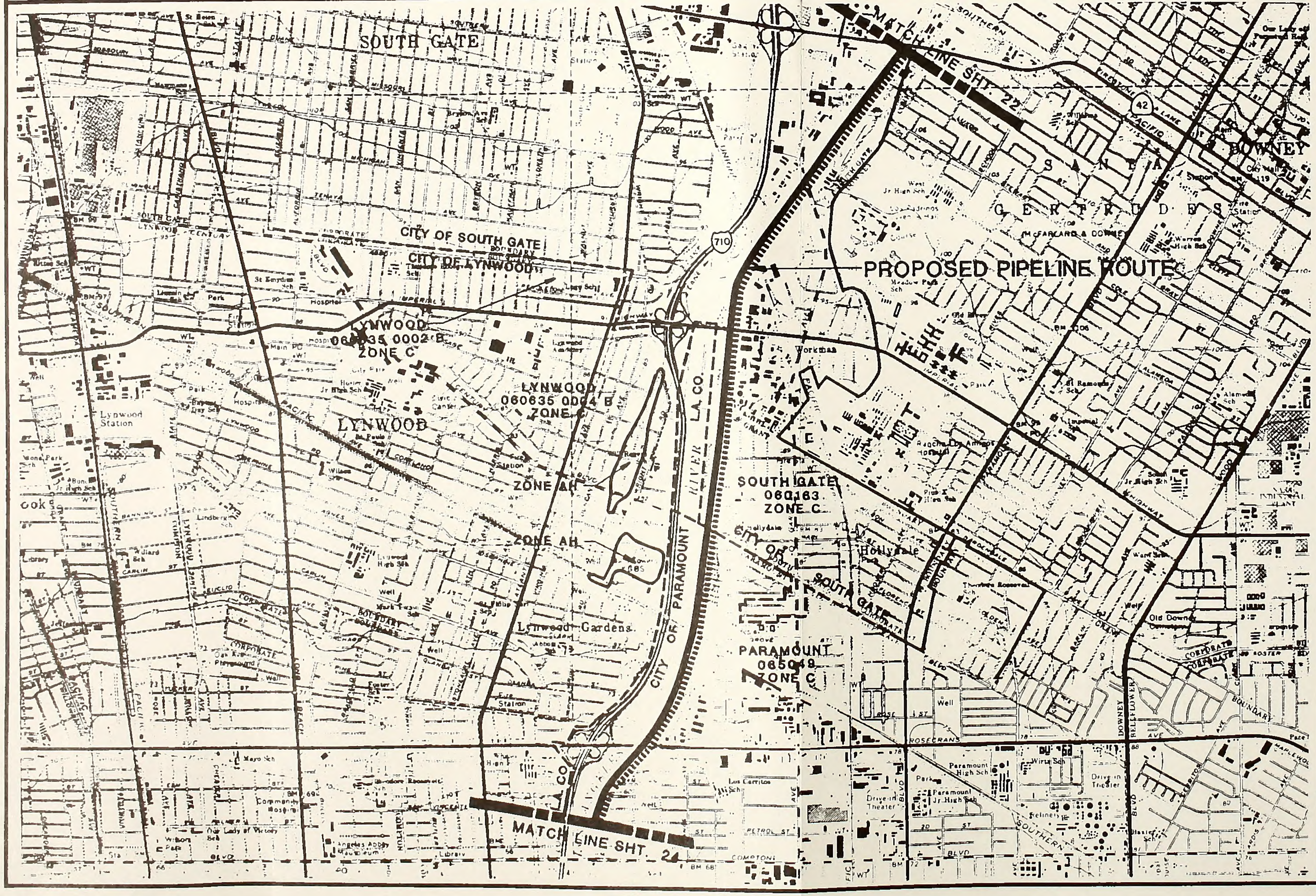
Note : Base Map USGS 7.5 minute quadrangle(s) produced by Mormac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

CAJON PIPELINE

eip

90439

◀ Qal ▶	**Soils**
	Geology
◀ Los Angeles River ▶◀ ▶	**Hydrology**
◀ UH ▶	**Biological Resources**
◀ Low ▶	**Paleontology**
◀ City of Paramount ▶◀ City of South Gate ▶	**Jurisdiction**
◀ R, I, RN, FC ▶◀ I, RN, FC ▶	**Land Use**



Legend

Proposed Pipeline ▬▬▬

Alternate Pipeline - - - - -

Gate Valve ▶◀

Check Valve

BLM ••••••••

City and County Boundary — — — — —

US Forest Service

Fault Trace — —

LA County Flood Control ||||||||||||||||

Areas of Minimal Flooding ZONE C

Area of 100 Year Flood ZONE A

Percolation Areas ▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

CAJON PIPELINE

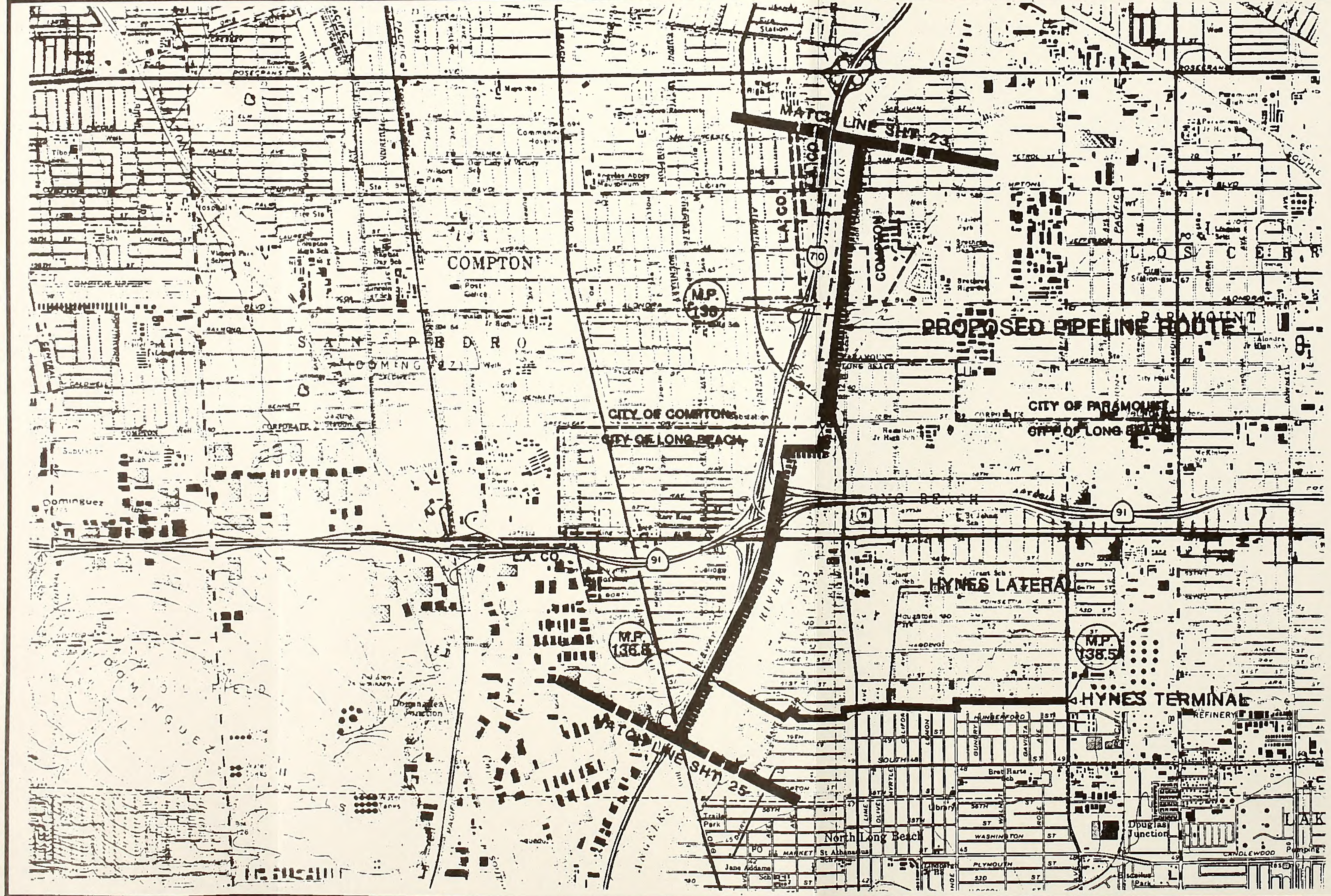
eip

90439

Key Features Along the Cajon Pipeline Route

Appendix A: Map 24 of 26

◀ Qal ▶	**Soils**
	Geology
Los Angeles River ▼	**Hydrology**
◀ UH ▶	**Biological Resources**
◀ Low ▶	**Paleontology**
City of Long Beach ◀ L ▶◀ P ▶◀ C ▶◀ P ▶ City of Paramount City of Compton	**Jurisdiction**
◀ R, RN, I, FC ▶	**Land Use**



Legend

Proposed Pipeline ▬▬▬

Alternate Pipeline ▬ ▬ ▬

Gate Volve ⋈

Check Volve

BLM ●●●●●●●●

City ond County Boundory — — — —

US Forest Service ▰▰▰▰

Fault Trace —— ——

LA County Flood Control ||||||||||||||

Areas of Minimol Flooding ZONE C

Area of 100 Year Flood ZONE A

Percolation Areas ▨

Scale - 1" = 2860'

Note : Bose Mop USGS 7.5 minute quadrangle(s) produced by Mormoc to information supplied by Cojon Pipeline Co. (os of 12-11-91).

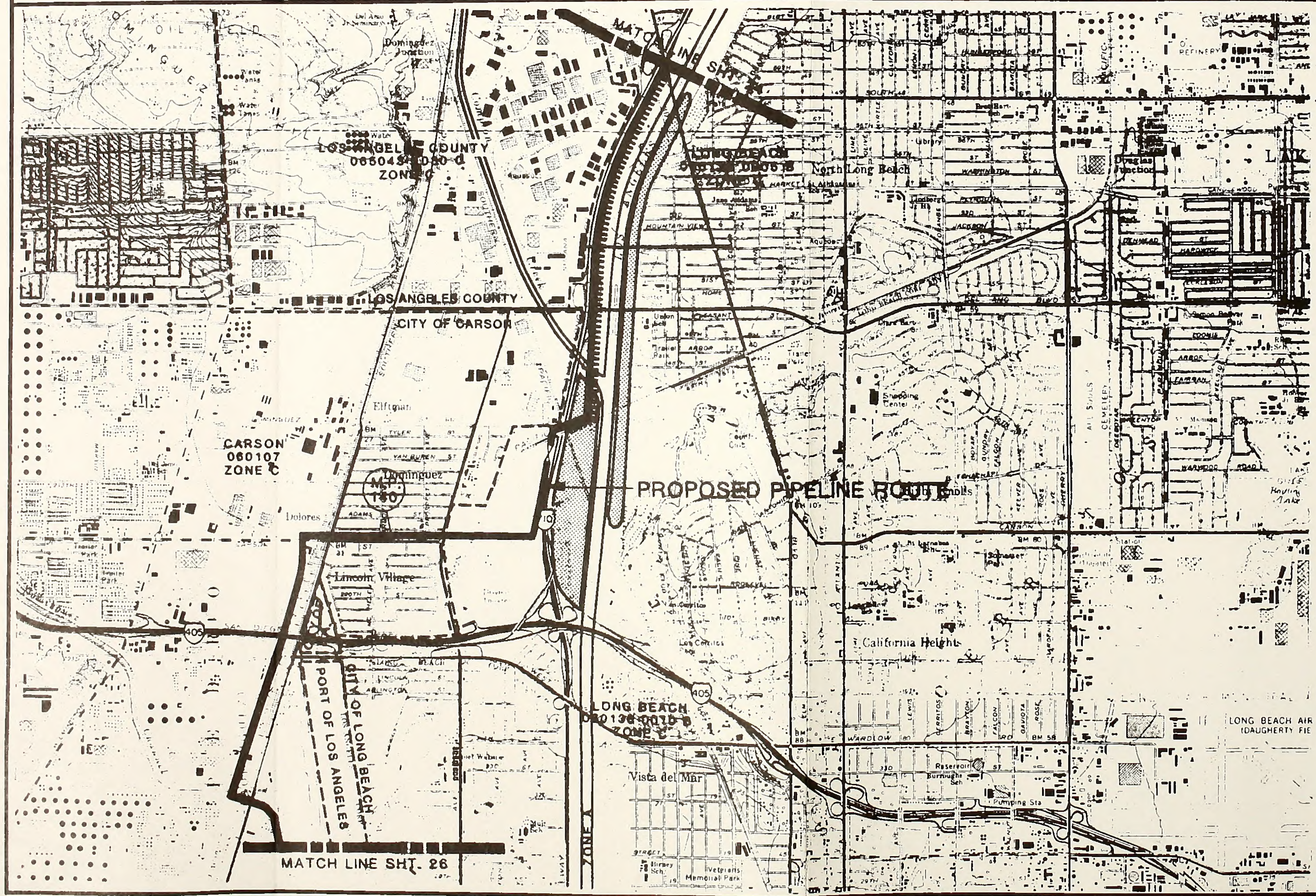
CAJON PIPELINE

eip

Key Features Along the Cajon Pipeline Route

Appendix A: Map 25 of 26

Soils	◀ Qal ▶
Geology	
Hydrology	Compton Creek ▼
Biological Resources	◀ UH ▶
Paleontology	◀ Low ▶
Jurisdiction	◀ City of Carson ▶◀ City of Long Beach ▶
Land Use	◀ FC, R, I, C, RN ▶



Legend

Proposed Pipeline ━━━━
Alternate Pipeline ━ ━ ━ ━
Gate Valve ⋈
Check Valve
BLM ••••••••
City and County Boundary — — — — —
US Forest Service ▰▰▰▰▰
Fault Trace —— ——
LA County Flood Control ||||||||||||||||
Areas of Minimal Flooding ZONE C
Area of 100 Year Flood ZONE A
Percolation Areas ▨

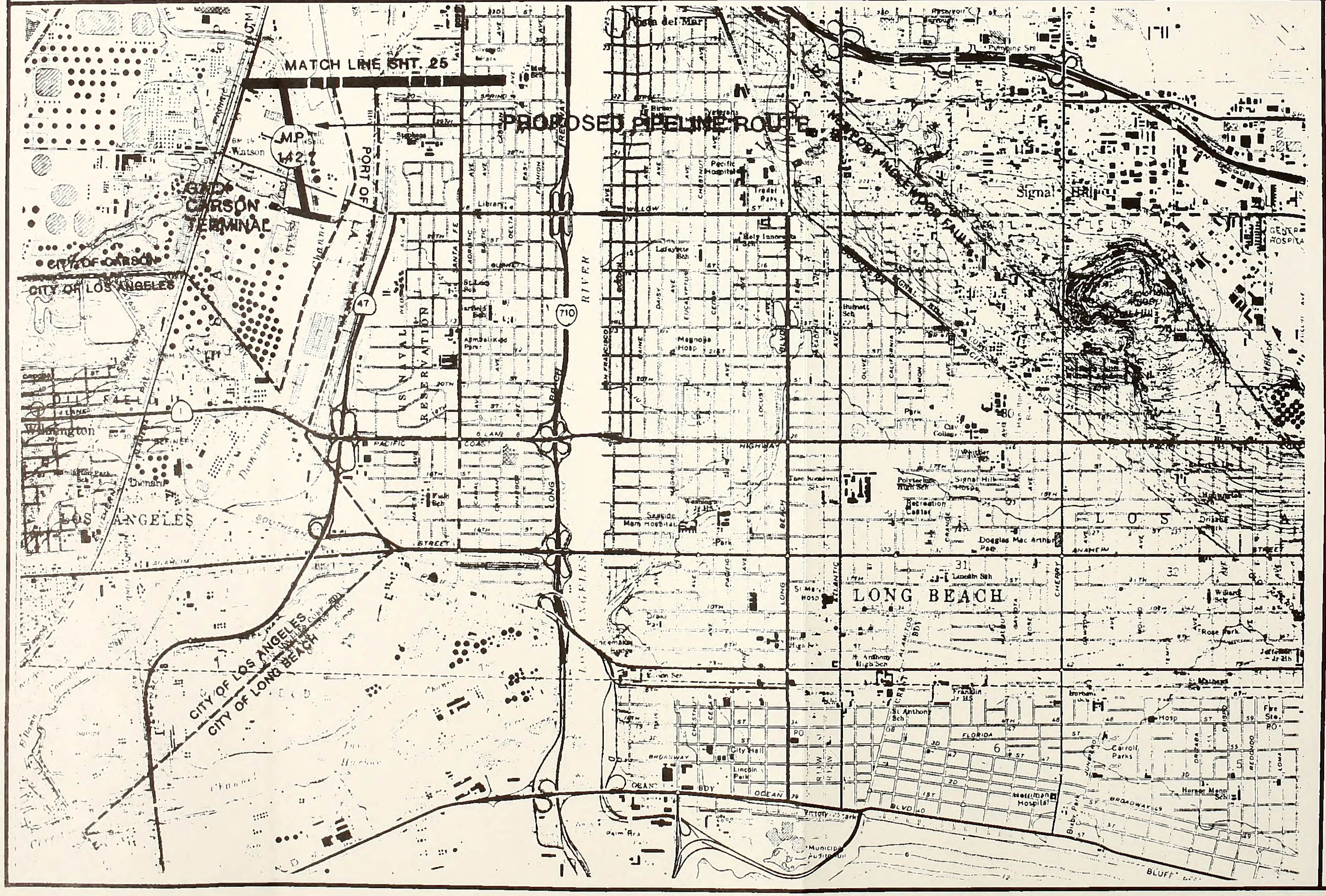
Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Ca. (as of 12-11-91).

CAJON PIPELINE

eip
90439

◀ Qal ▶	Soils
	Geology
Dominguez Channel ▼	Hydrology
◀ UH ▶	Biological Resources
◀ Low ▶	Paleontology
◀ City of Carson ▶	Jurisdiction
◀ I, OS ▶	Land Use



Legend

Proposed Pipeline ▬▬▬

Alternate Pipeline - - - - -

Gate Valve ⋈

Check Valve

BLM ●●●●●●●●

City and County Boundary — - — - —

US Forest Service ▰▰▰▰▰

Fault Trace —— ——

LA County Flood Control ||||||||||||||||

Areas of Minimal Flooding ZONE C

Area of 100 Year Flood ZONE A

Percolation Areas ▨

Scale - 1" = 2860'

Note : Base Map USGS 7.5 minute quadrangle(s) produced by Marmac to information supplied by Cajon Pipeline Co. (as of 12-11-91).

CAJON
PIPELINE

eip

B

Initial Study Checklist and Notice of Preparation

City of Adelanto
CALIFORNIA

TO: Responsible Agencies and Interested Persons

FROM: Patricia A. Chamberlaine, City Administrator

DATE: July 1, 1991

SUBJECT: Notice of Preparation (NOP)
Joint Environmental Impact Statement/Environmental Impact Report
Cajon Pipeline Project

Cajon Pipeline Company, Ltd. has proposed construction of a 750,000 barrel crude terminal and a 126 mile, twenty (20) inch diameter insulated pipeline to transport heavy crude oil from the new terminal site 27 miles west of Barstow, California to the GATX crude oil terminal in Carson, California. This pipeline is being proposed as an alternative to transporting the oil by marine tanker of rail. It has been determined that the project will require preparation of both an Environmental Impact Statement (EIS) and an Environmental Impact Report (EIR). Therefore, the Bureau of Land Management acting as lead agency pursuant to the National Environmental Policy Act (NEPA) and the City of Adelanto serving as lead agency pursuant to the California Environmental Quality Act (CEQA) are proceeding to prepare a joint EIS/EIR on the project. This joint document will be prepared pursuant to the California Environmental Quality Act Guidelines Section 21083.7 and 115220 et seq which addresses joint document preparation. The purpose of the joint EIS/EIR is to assess the environmental impacts associated with the construction of the project.

Several public scoping meetings will be held in locations along the pipeline route. A schedule of meeting times, dates and locations is included in this notice.

Contents of the Notice of Preparation

1. Notice of Preparation Form
2. Purpose and Intended Use of EIS/EIR
3. Project Description
4. Preliminary List of Issues to be Addressed
5. List of Agencies and Individuals Contacted
6. Vicinity Map
7. Reference List

Chamberlaine

Patricia A. Chamberlaine
City Administrator

11600 AIR BASE ROAD (P.O. BOX 10) ADELANTO, CALIFORNIA 92301 (619) 246-8606

NOTICE OF PREPARATION

July 1, 1991

FROM: City of Adelanto

SUBJECT: Notice of Preparation for Draft Environmental Impact Statement/Environmental Impact Report to be Prepared Jointly by the U.S. Department of Interior, Bureau of Land Management (BLM) and the City of Adelanto

PROJECT TITLE: Cajon Pipeline Project

PROJECT APPLICANT: Cajon Pipeline Company, Ltd.
6415 Katella Avenue
Cypress, CA 90630-5207
Phone: (714) 220-3279
FAX: (714) 220-3213

The City of Adelanto will serve as lead agency for the preparation of an Environmental Impact Report for the Cajon Pipeline Project. The Bureau of Land Management will serve as lead agency for the preparation of an Environmental Impact Statement. The final document will be a joint EIS/EIR and will meet both the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) Guidelines. The document will address and evaluate the environmental impacts associated with the construction and operation of a 750,000 barrel crude oil terminal and a 126 mile, twenty (20) inch diameter insulated pipeline to transport heavy crude oil from the new terminal site 27 miles west of Barstow, California to the GATX crude oil terminal in Carson, California.

The views of your agency as to the scope and content of the environmental information germane to your agency's statutory responsibilities in connection with the proposed project are hereby solicited. Responsible agencies must use the joint EIS/EIR prepared under the direction of the Bureau of Land Management and the City of Adelanto when considering permits or other approvals for the project.

The project description, location, and preliminary list of environmental issues to be addressed are contained in the attached materials. Due to time limits mandated by State law, your response must be sent at the earliest possible date, but no later than 30 days after receipt of this notice.

PROJECT DESCRIPTION

The Cajon Pipeline Company proposes to permit and construct a new crude oil terminal and a 126 mile insulated heavy crude oil pipeline with a maximum capacity of 180,000 BPD from 12 Gauge Lake, California (27 miles west of Barstow) to the Los Angeles area GATX crude oil terminal located in Carson, California. The facilities will consist of a new 750,000 barrel crude oil terminal (Cajon Terminal), located adjacent to the All American Pipeline, 12 Gauge Lake Heater Station, where it will receive crude oil through a connection to the All American Pipeline. The originating pump station at Cajon Terminal, rated at 3,000 BHP, will pump the crude, through a new 20 inch diameter insulated pipeline, south to the Adelanto booster pump station located approximately at Mile Post 21. There it will again be pumped, utilizing 3,000 BHP, up over Cajon Pass and on to the GATX Terminal. Table 2.1 provides a summary of the design criteria for the proposed Cajon Pipeline. Figure 2-1 is a vicinity map of the pipeline route. Figure 2-3 is the preliminary alignment of the pipeline route.

All of the crude oil entering the Cajon system at the Cajon Terminal will be delivered by connecting common carrier pipelines and the crude oil leaving the Cajon system will be delivered to the existing GATX crude oil terminal which currently is connected by pipelines to 13 refineries in the Los Angeles Basin. The entire Cajon system will be insulated.

The proposed pipeline and terminal will require permits from several agencies, including the Bureau of Land Management, the U.S. Army Corps of Engineers, the U.S. Forest Service and California Fish and Game Commission.

The capital cost of the project described above, which can be permitted, engineered and constructed in approximately twenty-four months, will be $108,150,000 (1990 Dollars). Testing and start-up of the pipeline will be completed in the third quarter of 1993.

PUMPING STATIONS

Pipeline hydraulics were calculated to transport OCS crude oil through the system. In general, heavy crude will require two pumping stations to deliver the crude oil the length of the pipeline.

A schematic for the proposed stations is shown in Figure 2-2. A complete pumping station contains three pumping units as the main equipment items. The pumps are electric motor driven horizontal split case centrifugal units. Two units will be operating with the third unit as a standby. The pumping units will be equipped with state-of-the-art machinery monitoring systems to provide advance warning of impending equipment failures.

Table 2-1
DESIGN CRITERIA

ROUTE DISTANCE-SCALED FROM MAP		126 miles
ELEVATIONS:		
Cajon Terminal		2,275 feet
Station 2		2,980 feet
GATX Terminal		25 feet
LINE PIPE:		
Specification		API 5LX-60
Outside Diameter		20 inches
Wall Thickness		0.344 inches
		0.500 inches
Weld Joint Factor		1.0
Volume to be Transported		150,000 BPD
Pipeline Utilization Factor		0.95
CRUDE OIL CHARACTERISTICS:		
Typical Medium-Gravity	@ 60°F	17.0-22.0 API
Viscosity	@ 140°F	380 SSU
	@ 100°F	1,650 SSU
	@ 60°F	11,500 SSU
Sulfur		1.0-4.0 %
Typical Heavy-Gravity	@ 60°F	15.0-17.0 API
Viscosity	@ 160°F	400 SSU
	@ 100°F	3,860 SSU
	@ 60°F	34,000 SSU
Sulfur		3.0-4.0 %
OPERATING PRESSURES:		
Maximum Discharge Pressure		900 psig
Minimum Suction Pressure		50 psig
OPERATING TEMPERATURES:		
Maximum Discharge Temperature		
Medium Crude		140 °F
Heavy Crude		160 °F
Minimum Operating Temperature		
Medium Crude		90 °F
Heavy Crude		100 °F

Figure 2-1
PROJECT VICINITY MAP

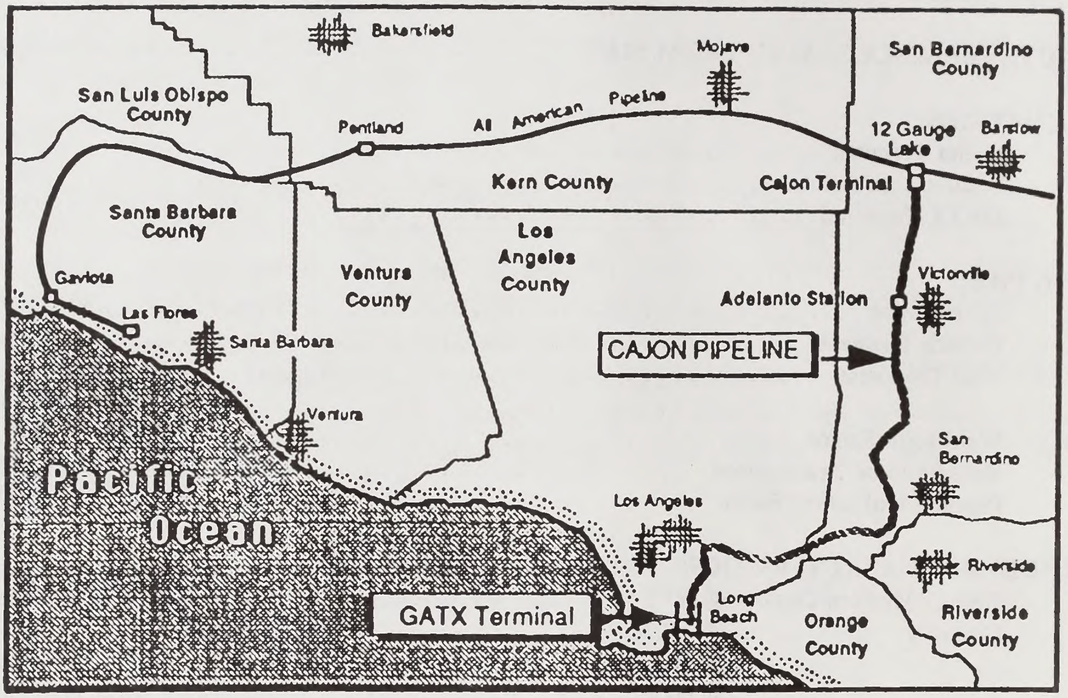
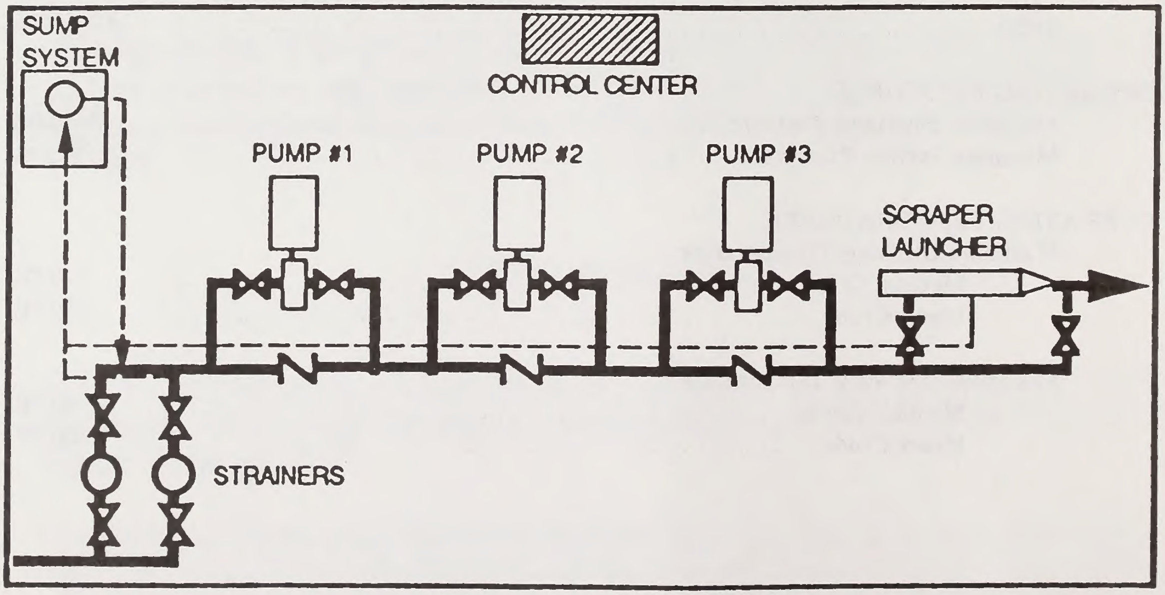


Figure 2-2
TYPICAL PUMPING STATION SCHEMATIC



Any additional heat that is required will be supplied by existing heaters at the All American Pipeline's 12 Gauge heater station which are already permitted.

The control room and switchgear will be housed in a prefabricated and pre-wired power center. It will also house the communications equipment and supervisory control system equipment.

PIPELINE ROUTE

The pipeline route, beginning 27 miles west of Barstow adjacent to the AAPL 12 Gauge Lake heater station, extends south of Mojave, California, paralleling US 395, crossing the west side of the City of Adelanto, west of Victorville until it intersects with Interstate 15, through Cajon Pass to Ontario. At Ontario, the route proceeds west and again southwest conforming to the Pac-Tex-Sohio alignment and to the GATX Terminal at Carson, California. Major portions of the route follow flood control channels. The pipeline will be situated primarily within BLM and USDA Forest corridors and parallel to or within existing rights-of-way.

SUPERVISORY CONTROL AND SURVEILLANCE

The pipeline design includes a supervisory control and surveillance system that will provide 24-hour remote control and monitoring of all operations from a main dispatching center. The system will be comprised of a master station having hot-standby equipment and will be all solid-state, digital, continuously scanning type that automatically scans, or interrogates, one or more remote terminal unit (RTU) groups in sequence. This automatic scan sequence will be momentarily interrupted only to transmit control commands that are initiated by a dispatcher. A dispatcher's console, manned 24-hours a day, will contain redundant, full-color cathode-raytube (CRT) display units for observation of pipeline operating data transmitted from the station RTU's. This data will include equipment alarm and status information along with transmitted values for pressures, temperatures, flow rates, accumulated meter readings, tank levels, leak detection, and other operating information to ensure safe and efficient operation. The console will also include redundant control keyboards for entering instructions, or data, into the system and for the execution of control commands.

An event logger will be provided to chronologically record each operational event, and an information logger will be provided to record all operations reports as may be required. The master station will include an integrally programmed leak-detection system which is designed to adjust for variations in operating pressures, temperatures, and short-term changes in flow rate in and out of the pipeline.

LIST OF AGENCIES CONTACTED

State Agencies

State Clearinghouse
1400 Tenth St., Room 121
Sacramento, CA 95814

Office of Planning and Research
1400 Tenth St.
Sacramento, CA 95814

The Resources Agency of California
Resources Building
1416 Ninth St.
Sacramento, CA 95814

California Department of Parks and Recreation
Environmental Services
245 W. Broadway, Ste. 350
Long Beach, CA 90802

California Department of Parks and Recreation
P.O. Box 2390
Sacramento, CA 95811
Attn: James Doyle/Bonnie Porter

California Coastal Commission
631 Howard St., 4th Floor
San Francisco, CA 94105
Attn: Suzanne Rogalin

Air Resources Board
1102 "Q" St.
Sacramento, CA 95814

CalTrans
District 7
120 So. Spring St.
Los Angeles, CA 90054

CalTrans
District 8
247 West Third St.
San Bernardino, CA 92403

Curt Anderson, Planning Director
Planning Department
City of Fontana
P.O. Box 518
Fontana, CA 92335

L. J. Henderson, Principal Planner
Planning Department
City of Rancho Cucamonga
P.O. Box 807
Rancho Cucamonga, CA 91729

John Freiman, Deputy City Planner
Planning Department
City of Ontario
303 E. "B" St.
Ontario, CA 91764-4196

Rob Clark, Community Development Director
City of Montclair
5111 Benito Street
Montclair, CA 91763

Ms. Margo Wheeler, Director
Community Development Dept.
City of Pomona
P.O. Box 660
Pomona, CA 91769

J. D. Ballas, City Engineer
City of Industry
P.O. Box 3366
City of Industry, CA 91744

Ann Negendank, Planning Director
Planning Department
City of Pico Rivera
P.O. Box 1016
Pico Rivera, CA 90660

Paul Deibel, Planning Director
Planning Department
City of Montebello
P.O. Box 220
Montebello, CA 90640

Patrick Brown, Director
Community Development Department
City of Carson
P.O. Box 6234
Carson, CA 90749

Jim DeStefano, Planning Director
Planning Department
City of Diamond Bar
21660 Copley Drive, Suite 190
Diamond Bar, CA 91765-4177

Ray Ramirez, Assistant Director
Community Development Department
City of Commerce
2535 Commerce Way
Commerce, CA 90040

Federal Agencies

U.S. Department of Agriculture
Forest Service
San Bernardino National Forest
Lytle Creek Ranger Station
Star Route Box 100
Fontana, CA 92336-9704
Attn: Gary Earney, District Ranger

Minerals Management Service
1340 W. Sixth St., MS 300
Los Angeles, CA 90017
Attn: Tom Dunaway

U.S. Corps of Engineers
Los Angeles District, Construction Operators Division
P.O. Box 2711
Los Angeles, CA 90053-2325
Attn: Lowell Flannery

U.S. Corps of Engineers
Los Angeles District, Planning Division
P.O. Box 2711
Los Angeles, CA 90053-2325
Attn: Richard Schubel

SCHEDULE OF SCOPING MEETINGS
FOR
CAJON PIPELINE PROJECT

TUESDAY, AUGUST 13

CITY OF POMONA COUNCIL CHAMBERS
505 S. GAREY AVE.
POMONA, CA
7:00 P.M. - 10:00 P.M.

WEDNESDAY, AUGUST 14

CARSON COMMUNITY CENTER
801 E. CARSON ST.
MULTI PURPOSE ROOM 111
CARSON, CA
7:00 P.M. - 10:00 P.M.

THURSDAY, AUGUST 15

CITY OF ADELANTO COUNCIL CHAMBERS
11600 AIRBASE ROAD
ADELANTO, CA
7:00 P.M. - 10:00 P.M.

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
California Desert District Office
6221 Box Springs Boulevard
Riverside, California 92507-0714

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:

CA-27497
1792, 2880
(CA-060.5)

RECEIVED
OCT 24 1991
EIP ASSOCIATES
LOS ANGELES, CA.

22 OCT 1991

Ms. Bronwyn A. Buntine
EIP Associates
80 S. Lake Avenue, Suite 600
Pasadena, CA 91101

Dear Ms. Buntine:

In response to our Notice of Intent (NOI) and the City of Adelanto's Notice of Preparation (NOP), we received a total of 12 responses. Copies of these are enclosed for your perusal and any issues raised or concerns expressed should be addressed in the Draft EIR/S. Furthermore, we have added the names of these respondents to the mailing list for the Cajon Pipeline Project.

If, after your perusal, you should have any questions, please call our Special Projects Manager, Mr. Stephen Johnson, at (714) 653-2363.

Sincerely,

Gerald E. Hillier
ACTING District Manager

Enclosures

cc: Matt Elliott, Cajon
Dee Dorval, Adelanto (w/o encl)

STATE OF CALIFORNIA
PETE WILSON, *Governor*

GOVERNOR'S OFFICE OF PLANNING AND RESEARCH
1400 TENTH STREET
SACRAMENTO, CA 95814

991 AUG [illegible] 11 35
[illegible] DISTRICT
[illegible] CA

DATE: Aug 02, 1991

TO: Reviewing Agency

RE: CITY OF ADELANTO's NOP for
CAJON PIPELINE PROJECT
SCH # 91082007

Attached for your comment is the CITY OF ADELANTO's Notice of Preparation of a draft Environmental Impact Report (EIR) for the CAJON PIPELINE PROJECT.

Responsible agencies must transmit their concerns and comments on the scope and content of the EIR, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of this notice. We encourage commenting agencies to respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

PATRICIA CHAMBERLAINE
CITY OF ADELANTO
P.O. BOX 10
ADELANTO, CA 92301

with a copy to the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the review process, call Russell Colliau at (916) 445-0613.

Sincerely,

David C. Nunenkamp
Deputy Director, Permit Assistance

Attachments

cc: Lead Agency

RECEIVED
AUG 8 1991
CITY OF ADELANT

NOP Distribution List

SCH# 91082007

S = sent by lead agency
X = sent by SC

Resources Agency

☐ [illegible] Cagle
Dept. of Boating & Waterways
1629 S Street
Sacramento, CA 95814
916/445-6281

☐ Gary L. Holloway
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219
415/543-8555

☐ Reed Holderman
State Coastal Conservancy
1330 Broadway, Suite 1100
Oakland, CA 94612
415/464-1015

☑ Dennis O'Bryant
Dept. of Conservation
1416 Ninth Street, Room 1326-2
Sacramento, CA 95814
916/322-5873

○ Div. of Mines and Geology

○ Div. of Oil and Gas

○ Land Resources Protect. Unit

☐ Douglas Wickizer
Dept. of Forestry
1416 Ninth Street, Room 1516-2
Sacramento, CA 95814
916/322-0128

☐ Hans Kreutzberg
Office of Historic Preservation
P.O. Box 942896
Sacramento, CA 94296-0001
916/322-9621

☐ Mike Doyle
Dept. of Parks and Recreation
P.O. Box 942896
Sacramento, CA 94296-0001
916/324-6421

☐ Anna Leena Bronson
Reclamation Board
1416 Ninth Street Room 706
Sacramento, CA 95814
916/322-3740

☐ Nancy Wakeman
S.F. Bay Conservation & Dev't. Comm.
30 Van Ness Avenue, Room 2011
San Francisco, CA 94102
415/557-3686

☑ Nadell Gayou
Dept. of Water Resources
1416 Ninth Street, Room 449
Sacramento, CA 95814
916/445-7416

Fish and Game - *Regional Offices*

☐ Gary Stacey, Regional Manager
Department of Fish and Game
601 Locust
Redding, CA 96001
916/225-2300 (8-442)

☐ **Jim Messersmith**, Regional Manager
Department of Fish & Game
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670
916/355-0922 (8-438)

☐ **B. Hunter**, Regional Manager
Department of Fish and Game
P.O. Box 47
Yountville, CA 94599
707/944-5518

☐ **G. Nokes**, Regional Manager
Department of Fish and Game
1234 East Shaw Avenue
Fresno, CA 93710
209/222-3761 (8-421)

☑ **Fred A. Worthley, Jr.**, Reg. Manager
Department of Fish and Game
330 Golden Shore, Suite 50
Long Beach, CA 90802
213/590-5113 (8-635)

Independent Commissions

☐ **John R. Nuffer**
California Energy Commission
1516 Ninth Street, MS-15
Sacramento, CA 95814
916/323-9180

☑ **William A. Johnson**
Native American Heritage Comm.
915 Capitol Mall, Room 288
Sacramento, CA 95814
916/322-7791

☑ **William Meyer**
Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102
415/557-1375 (8-597)

☑ **Betty Eubanks**
State Lands Commission
1807 - 13th Street
Sacramento, CA 95814
916/322-2795

Business, Transportation, & Housing

☐ **Sandy Hesnard**
Caltrans - Division of Aeronautics
P.O. Box 942874
Sacramento, CA 94274-0001
916/324-1833

☐ **Sgt. Jim Weddell**
California Highway Patrol
Long Range Planning Section
Planning and Analysis Division
2555 First Avenue
Sacramento, CA 95818
916/445-1981

☐ **Ron Helgason**
Caltrans - Planning
P.O. Box 942874
Sacramento, CA 94274-0001
916/445-5

Department of Transportation
District Contacts

☐ **Jo Sanford**
Caltrans, *District 1*
1656 Union Street
Eureka, CA 95501
707/445-6671 (8-538)

☐ **Michelle Gallagher**
Caltrans, *District 2*
1657 Riverside Drive
Redding, CA 96001
916/225-3259 (8-442)

☐ **Brian J. Smith**
Caltrans, *District 3*
703 B Street
Marysville, CA 95901
916/741-4277 (8-457)

☐ **Gary S. Adams**
Caltrans, *District 4*
P.O. Box 7310
San Francisco, CA 94120
415/557-9162 (8-597)

☐ **Jerry Laumer**
Caltrans, *District 5*
P.O. Box 8114
San Luis Obispo, CA 93403-8114
805/549-3161 (8-629)

☐ **Moses Pacheco**
Caltrans, *District 6*
P.O. Box 12616
Fresno, CA 93778
209/276-5989 (8-422)

☐ **Gary McSweeney**
Caltrans, *District 7*
120 South Spring Street
Los Angeles, CA 90012
213/620-2376 (8-640)

☑ **Harvey Sawyer**
Caltrans, *District 8*
247 West Third Street
San Bernardino, CA 92403
714/383-4808 (8-670)

☐ **Lisa Flores**
Caltrans, *District 9*
500 South Main Street
Bishop, CA 93514
619/872-0203 (8-627)

☐ **Al Johnson**
Caltrans, *District 10*
P.O. Box 2048
Stockton, CA 95201
209/948-7838 (8-423)

☐ **Jim Cheshire**
Caltrans, *District 11*
P.O. Box 85406
2829 Juan Street
San Diego, CA 92138-5406
619/237-6755 (8-631)

☐ **Aileen Kennedy**
Caltrans, *District 12*
2501 Pullman St.
Santa Ana, CA 92705
714/724-2239 (8-655)

Food and Agriculture

☐ **Vashek Cervinka**
Dept. of Food and Agriculture
1220 N Street, Room 104
Sacramento, CA 95814
916/322-5227

Health & Welfare

☑ **Quy Tu**
Dept. of Health
714 P Street, Room 1253
Sacramento, CA 95814
916/323-6111

☐ DHSTSCD: ____________________

State and Consumer Services

☐ **Robert Sleppy**
Dept. of General Services
400 P Street, Suite 3460
Sacramento, CA 95814
916/324-0214

Environmental Affairs

☑ **Barbara Fry**
Air Resources Board
1102 Q Street
Sacramento, CA 95814
916/322-8267

☐ **Jeannie Blakeslee**
Calif. Waste Management Board
1020 Ninth Street, Room 300
Sacramento, CA 95814
916/327-0454

State Water Resources Control Board

☑ **Allan Patton**
State Water Resources Control Board
Division of Clean Water Programs
P.O. Box 944212
Sacramento, CA 94244-2120
916/739-4414

☐ **Dave Beringer**
State Water Resources Control Board
Delta Unit
P.O. Box 2000
Sacramento, CA 95810
916/322-9870

☐ **Ed Anton**
State Water Resources Control Board
Division of Water Quality
P.O. Box 100
Sacramento, CA 95801
916/445-9552

☐ **Mike Falkenstein**
State Water Resouces Control Board
Division of Water Rights
901 P Street
Sacramento, CA 95814
916/324-5636

☑ APCD/AQMD: 25
San Bernardino

Regional Water Quality Control Board

☐ **NORTH COAST REGION (1)**
1440 Guerneville Rd.
Santa Rosa, CA 95401
707/576-2220 (8-590)

☐ **SAN FRANCISCO BAY REGION (2)**
2101 Webster, Suite 500
Oakland, CA 94614
415/464-1255 (8-561)

☐ **CENTRAL COAST REGION (3)**
81 Higuera Street, Suite 200
San Luis Obispo, CA 93401-5414
805/549-3147 (8-629)

☐ **LOS ANGELES REGION (4)**
101 Center Plaza Drive
Monterey Park, CA 91754
213/266-4460 (8-640)

☐ **CENTRAL VALLEY REGION (5)**
3443 Routier Road, Suite A
Sacramento, CA 95827-3098
916/361-5600

○ **Fresno Branch Office**
3614 East Ashlan Avenue
Fresno, CA 93726
209/445-5116 (8-421)

○ **Redding Branch Office**
415 Knollcrest Drive
Redding, CA 96002
916/224-4845 (ATS 441)

☐ **LAHONTAN REGION (6)**
2092 Lake Tahoe Boulevard
Suite #2
South Lake Tahoe, CA 96150
916/544-3481

● **Victorville Branch Office**
15428 Civic Drive, Suite 100
Victorville, CA 92392-2359
619/241-6583

☐ **COLORADO RIVER BASIN REGION (7)**
73-271 Highway 111, Suite 21
Palm Desert, CA 92260
619/346-7491

☐ **SANTA ANA REGION (8)**
6809 Indiana Avenue, Suite 200
Riverside, CA 92506
714/782-4130 (8-632)

☐ **SAN DIEGO REGION (9)**
9771 Clairemont Mesa Blvd., Suite B
San Diego, CA 92124-1331
619/265-5114 (8-636)

☐ OTHER: ____________________

☐ OTHER: ____________________

6/20/91

STATE OF CALIFORNIA PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500

September 10, 1991 File: 700.000

Patricia A. Chamberlaine
City Administrator
City of Adelanto
P. O. Box 10
Adelanto, CA 92301

NOTICE OF PREPARATION - CONSTRUCT 20-INCH CRUDE OIL PIPELINE FROM NEAR BARSTOW TO GATX TERMINAL AT CARSON AND CALLED CAJON PIPELINE PROJECT. THE PORTION OF THIS PIPELINE FROM POMONA TO CARSON IS IN THE LOS ANGELES REGION. SCH#91082007: CITY OF ADELANTO

We have reviewed the subject document regarding the proposed project.

The discharge of contaminated shallow ground waters from construction trenches to surface waters is subject to a National Pollution Discharge Elimination System (NPDES) Permit issued by the Los Angeles Regional Water Quality Control Board. A permit application should be submitted to this office at least 180 days prior to the start of the discharge. Please contact Winnie Deslate-Jesena at (213) 266-7594 to obtain application forms.

At places where spills may occur from the pipeline operations, impervious containment shall be provided to protect ground and surface waters from contamination. There should be a spill plan for use during pipeline ruptures.

Thank you for this opportunity to review your document. If you have any questions regarding the environmental document, please contact Eugene C. Ramstedt at (213) 266-7553.

John L Lewis

JOHN L. LEWIS, Unit Chief
Technical Support Unit

cc: Tom Loftus, State Clearinghouse

(07-13-89)

RECEIVED
SEP 16 1991
CITY OF ADELANTO

STATE OF CALIFORNIA—THE RESOURCES AGENCY
PETE WILSON, Governor

DEPARTMENT OF CONSERVATION
DIVISION OF ADMINISTRATIVE SERVICES
DIVISION OF MINES AND GEOLOGY
DIVISION OF OIL AND GAS
DIVISION OF RECYCLING

1416 Ninth Street
SACRAMENTO, CA 95814
TDD (916) 324-2555
ATSS 454-2555

(916) 445-8733

AUG 30 1991

Ms. Patricia Chamberlaine
City of Adelanto
P.O. Box 10
Adelanto, CA 92301

Dear Ms. Chamberlaine,

Subject: NOP for the Cajon Pipeline Project, SCH# 91082007

The Department of Conservation's Division of Oil and Gas has reviewed the NOP for the proposed project and submits the following comments for your consideration.

The proposed route for the Cajon Pipeline Project will pass through portions of the Montebello, Long Beach, and Wilmington oil fields.

Prior to commencing operations, the project applicant should consult with the local Division of Oil and Gas district offices for information on any wells located near the pipeline route.

If any structure is to be located over or in the proximity of a previously abandoned well, there is the possibility that the well may need to be plugged and abandoned to current Division specifications. Section 3208.1 of the Public Resources Code authorizes the State Oil and Gas Supervisor to order the reabandonment of any previously abandoned well when construction of any structure over or in the proximity of the well could result in a hazard.

Furthermore, if any abandoned or unrecorded wells are uncovered or damaged during excavation or grading, remedial plugging operations may be required. If such damage occurs, the Division's district office must be contacted to obtain information on the requirements for and approval to perform remedial operations.

Although the possibility for future problems from oil and gas wells that have been plugged and abandoned or reabandoned to the Division's current specifications are remote, we, nevertheless, suggest that a diligent effort be made to avoid building over any abandoned well.

RECEIVED
SEP 09 1991
CITY OF ADELANTO

The Division is mandated by Section 3106 of the Public Resources Code (PRC) to supervise the drilling, operation, maintenance, and abandonment of wells for the purpose of preventing: (1) damage to life, health, property, and natural resources; (2) damage to underground and surface waters suitable for irrigation or domestic use; (3) loss of oil, gas, or reservoir energy and,(4) damage to oil and gas deposits by infiltrating water and other causes. Furthermore, the PRC vests in the State Oil and Gas Supervisor the authority to regulate the manner of drilling, operation, maintenance, and abandonment of oil and gas wells so as to preserve, protect, and prevent waste of these resources, while at the same time encouraging operators to apply viable programs for the purpose of increasing the ultimate recovery of oil and gas.

The scope and content of information that is germane to the Division"s responsibility are contained in Section 3000 et seq. of the Public Resources Code, and administrative regulations under Title 14, Chapter 4 of the California Code of Regulations.

If you have any questions, please feel free to contact John Jepson at the Division district office in Long Beach. The address is 245 West Broadway, Suite 475, Long Beach, CA 90802; phone (213) 590-5311.

Sincerely,

Stephen E. Oliva
Environmental Program Coordinator

cc: John Jepson, Division of Oil and Gas, Long Beach
Mike Stettner, Division of Oil and Gas, Sacramento

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY PETE WILSON, *Governor*

DEPARTMENT OF TRANSPORTATION
DISTRICT 8, P.O. BOX 231
SAN BERNARDINO, CALIFORNIA 92402
TDD (714) 383-4609

August 26, 1991

08-SBd-Var-Var

Ms. Patricia A. Chamberlaine
City Administrator
11600 Air Base Road
P.O. Box 10
Adelanto, CA 92301

Dear Ms. Chamberlaine:

We have reviewed a Notice of Preparation of a Draft Environmental Impact Report for the Cajon Pipeline Project. This proposal will impact Caltrans facilities at numerous locations and in several different ways. Please address:

- o Any stream flow alterations expected within one mile upstream or downstream from Caltrans facilities. Impacts of concern are changes in flow rates, location, sediment transport and their possible impacts on road structures.
- o Dust during construction and until revegetation takes place must be addressed and mitigated where it impacts any state route.

Regarding work within state highway right of way, the following should be noted:

- o Lines parallel to the highway should, where possible, be placed outside of the state highway right of way; longitudinal installations within freeway right of way are permitted only under special circumstances, primarily where no other feasible alternatives exist.
- o Transverse lines should cross the highway at right angles.
- o Lines within highway rights of way may be required to be encased for ease of maintenance.
- o Lines crossing freeway rights of way are normally required to be encased between right of way limits.

AUG 2 [illegible] 1991

- Bore and jack methods of pipeline installation will be required at all state route and freeway ramp crossings.

This project will require an encroachment permit since there will be work within the State highway right of way; the Department of Transportation will be a responsible agency and will require certain measures be provided as a condition of permit issuance. All matters relating to the Encroachment Permit process, which include access, grading, and drainage issues, should be sent to:

Jennifer Horton
Permits
California Department of Transportation
P.O. Box 231
San Bernardino, CA 92402

If you have any questions, please contact Tom Meyers at (714) 383-6908 or FAX (714) 383-4936.

Sincerely,

Harvey J Sawyer

HARVEY J. SAWYER, Chief
Transportation Planning
San Bernardino County
Coordination Branch

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

ROUTING		
TO	DATE	INT
DM 1	9/5	A
ADM 2	9/9	D
SA		
DSR		
P&EC 3		
PA		
Admin		
OPS		
L&RR		
MIN		
AMs		
ACTION BY RETURN TO		

August 20, 1991

Mr. Gerald E. Hillier
District Manager
Bureau of Land Management
6221 Box Springs Blvd.,
Riverside, CA 92507-0714

ATTN: Cajon Pipeline Project

Dear Mr. Hillier:

The Environmental Protection Agency (EPA) has reviewed the Notice of Intent to prepare an Environmental Impact Statement (EIS) for the proposed **Cajon Pipeline, San Bernardino and Los Angeles Counties, CA** as published in the Federal Register, Wednesday, July 24, 1991. Our review is provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality NEPA Implementation Regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act.

The proposed project consists of constructing a 20" diameter heated pipeline for the purpose of transporting approximately 150,000 barrels of heavy, high sulphur crude oil each day from a heater station 27 miles west of Barstow, CA to a crude oil terminal in Carson, CA, some 127 miles. The pipeline would traverse both private and public lands in San Bernardino and Los Angeles Counties.

We recommend that your EIS address the full range of environmental implications which would be associated with such a project, affording special attention to:

- identifying areas of critical environmental concern including unique or rare biota and areas with potential for significant environmental impacts;

- identifying impacts to water, floodplains, and wetlands, including identification of Section 404 Clean Water Act requirements and proposals to ensure compliance with those requirements;

- identifying impacts to air quality in light of the current air quality status within the proposed project area, and demonstrating that construction and operating activities would adhere to the conformity provisions of the new Clean Air Act as defined in Section 176(c).

- identifying threats from spills and/or ruptures associated with the pipeline and its "appurtenant facilities," and addressing the proposed means to minimize the potential for spills and ruptures. The EIS should include a spill prevention and spill response and cleanup plan.

- identifying a full range of alternatives, including alternative routes, alternative means to transport the material, and alternative means to achieve the desired end result, i.e., appropriately refined oil.

Your discussions should be conducted with as much specificity as possible to ensure environmental resources are afforded full protection in accord with all applicable regulations. Consequently, in the development of your NEPA documents, we encourage you to work closely with all other federal, state, and local regulatory agencies, as applicable.

We appreciate the opportunity to comment on the proposed project and request three copies of the DEIS when it is completed. If you have any questions, please contact me at 415-744-1584 (FTS 484-1584), or have your staff contact Mr. David Farrel at 415-744-1574 (FTS 484-1574).

Sincerely,

Carolyn Yale (for JW)

Jacqueline Wyland, Chief
Office of Federal Activities

91-206
001151

CITY OF ONTARIO
303 EAST "B" STREET ONTARIO CALIFORNIA 91764-4196 (714) 986-1151

August 22, 1991

Patricia A. Chamberlaine
City Administrator
City of Adelanto
11600 Air Base Road (P.O. Box 10)
Adelanto, California 92301

RE: Response to Notice of Preparation for the Cajon Pipeline Project EIS/EIR

Dear Ms. Chamberlaine:

We sincerely appreciate the opportunity to comment and make the City's views available for use in the preparation of the Joint EIS/EIR. The following information will address the immediate concerns and issues which we would like to have analyzed further in the EIS/EIR. We are looking forward to the opportunity to review both the draft and final documents.

While pipelines may be the preferred means of transporting crude oil, potential environmental impacts should be addressed to minimize any adverse affects and keep pipeline transportation safe and efficient. We are pleased to see the preliminary list of issues in the notice of preparation and the general information handout from the scoping meeting. We request that this information be addressed and included with the EIS/EIR.

The following are our specific concerns and questions on the Cajon Pipeline Project.

- The City of Ontario would like to see a detailed map which depicts the pipeline route within and adjacent to the City limits. We would like to see specific pipeline locations, which sides of streets, etc.
- The Notice of Preparation "Project Description" emphasizes the terminals and pumping facilities, which may be the source of many environmental impacts; however, the "pipeline" is the aspect of the proposal which directly affects many jurisdictions and should be better addressed.
- The City of Ontario is concerned about the aesthetic impacts of the pipeline itself and construction activities in areas accessible to the public or areas even partially devoted to public uses.

RECEIVED
AUG 26 1991
CITY OF ADELANTO

* The City of Ontario is obviously concerned about explosions, ruptures, and leakage resulting from: seismic occurrences, train derailments, or other causes. An analysis should be provided which includes an assessment of the likelihood and type of pipeline-related accidents which might reasonably be expected to occur in Ontario in a worst case scenario and the impact which such an incident may have on our emergency services. Specifically, what impact will the pipeline have on Ontario's emergency response system and capabilities? Will Ontario have the manpower and equipment to respond to any potential disaster resulting from pipeline explosion or rupture? Will Ontario's emergency response time be at a safe and acceptable level?

* The City is currently in the process of adopting a new General Plan which includes policies related specifically to pipelines. Excerpts of the General Plan and GP/EIR have been included for your information and review. Especially note Policy 6.3 which requires new development to maximize building setbacks from existing pipelines and established pipeline routes, to a preferred depth of 150 feet where physically feasible, but in no event less than 50 feet. Whenever development which is proposed within 150 feet of petroleum pipelines, site plans must clearly show pipeline locations and all measures proposed to mitigate potential safety hazards.

* The City is concerned with the ability of the operator to decrease and/or terminate the flow of materials in the case of a rupture or leak. Please also describe contingency plans to remedy and correct situations resulting from ruptures or leaks.

* The City of Ontario is concerned with pipeline routing in relation to adjacent land uses (routing of the pipeline which minimizes any potential land use conflicts is preferred).

* Please explain the distance or interval at which you are monitoring flows and how.

* Please explain why a more direct coastal route would not be a better alternative. If the pipeline is to pass through Ontario, indicate why the route, as shown, is the best alternative, including an analysis of safety, setbacks, emergency response time, and aesthetic issues.

* Please explain all the sources of the crude oil and ultimate destinations.

* Does the refining of this crude oil take place at the LA GATX Terminal? Where and how does it leave this location?

☆ At the scoping meeting it was explained that the oil would cool down, coagulate and not spread at ambient temperatures. Are there studies which support this position? If so, please specify. Also explain why the oil does not cool down in the pipeline.

☆ Please describe the physical condition of this oil when at 140°F. Please specify its density, viscosity, specific gravity, etc. This analysis may be useful for the lay person to understand the potential harm or lack thereof associated with the project.

☆ Can the content of material transported in the pipeline be changed (i.e. from crude oil to natural gas)? Is there an agency (and, if so which one) that regulates this conversion of types of material flowing through this pipeline? If any change of materials transport is attempted will new permits be required? Will new environmental documents be required?

☆ If the pipeline is placed under a street or roadway, what are the potential effects from road reconstruction, compaction, etc.? Is there a possibility of placing the alignment below a center landscape median of a street where little or no reconstruction or compaction would occur? Can the pipeline be penetrated by tree roots?

☆ Will there be a regular and thorough maintenance program? If so, how is it conducted?

☆ Additional, concerns with routing of the pipeline through the City of Ontario includes the following:

1. Philadelphia Street east of Milliken Avenue is a very poor east-west alignment. The City of Ontario and Riverside County have recently improved Philadelphia Street. It has duel water systems and sewer systems, plus regional wastewater lines and major storm drain lines (120 inch RCP).

2. Along the Union Pacific Railroad Right-of-Way, the City of Ontario has three grade separation projects proposed. Haven Avenue at the U.P.R.R. and Grove Avenue at the U.P.R.R. are both scheduled to begin construction within the next 12 months. Archibald Avenue at the U.P.R.R. is in the planning stage. Given your needs to have the pipeline at least three feet below the surface, what specific routes do you propose to avoid these excavations?

3. There is a major flood control project proposed for West State Street, west of Mountain Avenue.

Again, we thank you for the opportunity to comment and hope that these issues will be addressed. If you have any questions, or require further information, please feel free to contact Elliott Ellsworth, of this Department at (714) 391-2506.

Sincerely,

ONTARIO PLANNING DEPARTMENT

Joyce Babicz

Joyce I. Babicz
City Planner

ee
JIB:EE:gjk
AES:VM

cc: Michael O'Connor, Assistant City Manager
Byron Ely, Development Director
Norm Priest, Community Economic Development Director
John Frieman, Deputy City Planner
Austin Sullivan, Principal Planner
Valerie McCowan, Senior Planner

Attachments:

CITY OF ONTARIO
DRAFT GENERAL PLAN
(EXCERPT)

3.6 PIPELINES

Issue Summary

Recent events have heightened public awareness of large diameter pipelines that traverse Ontario (and other communities). These lines transport petroleum products, all of which have some potential for rupture or explosion. There are two major pipeline corridors that traverse Ontario, as shown in Figure HA-4. Southern Pacific Pipeline Partners L.P. owns two gasoline pipelines that run east/west, within the Southern Pacific Railroad right-of-way. A 20-inch line originating in Carson carries gasoline, diesel fuel and aviation fuel. The line terminates in Phoenix and provides about 90 percent of Arizona's gasoline. It also supplies most of the aviation gasoline for Ontario International Airport. A 16-inch line originating in Norwalk parallels the 20-inch line and carries jet fuel to a storage complex in Rialto. From there the jet fuel is piped to Norton and March Air Force Bases.

The pipelines enter the City at Benson Avenue on the west, parallel the northern side of the Southern Pacific right-of-way to Ontario International Airport, where they parallel the southern side of the Southern Pacific right-of-way, parallel the northern side of the right-of-way beyond Ontario International, and exit the City at Etiwanda. Operating pressures range between 300-400 psi. The lines are buried a minimum of 42 inches below grade, with the exception of the traffic underpass at Grove Avenue. At this location, the lines are encased in a concrete pipe and attached to the side of the bridge. A breached line in or near the City could pose a serious threat to life and property, particularly in those areas closest to the railroad right-of-way.

Southern California Edison Company operates a low sulfur fuel oil pipeline that traverses the eastern portion of the City and serves the Edison Steam Generation Plant on Etiwanda Avenue in Rancho Cucamonga. The line enters the southern portion of the City at Milliken Avenue, travels north under Milliken to Inland Empire Boulevard, east to Rochester Avenue, then north to the city limits. The pipeline is 12 inches in diameter, with an operating pressure of 500 psi. A parallel 8-inch line is not presently in use for petroleum transport.

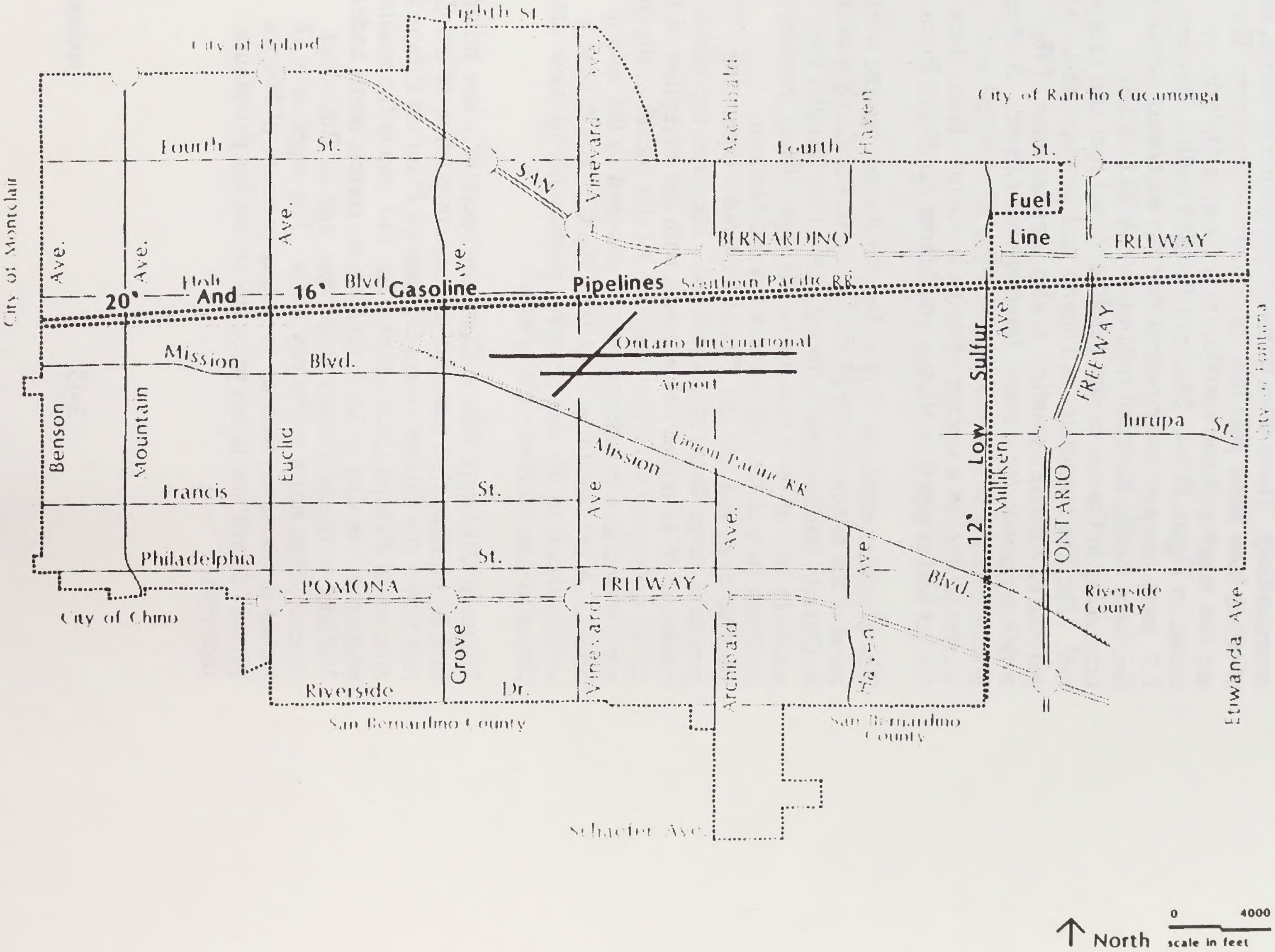


Figure HA-4
Petroleum Pipelines

CITY of ONTARIO

The Office of Pipeline Safety of the U.S. Department of Transportation is the primary agency responsible for inspection and maintenance of pipelines running through Ontario. Although the City does not have regulatory mandate over these pipelines, it can, however, control land use within the areas most affected by these pipelines.

The Transportation Research Board of the National Research Council has published a special report (# 219) entitled *Pipelines and Public Safety.* The following analysis is taken from that document, pages 66-67.

"Federal regulations prohibit locating liquids pipelines within 50 feet of any private dwelling, industrial building or place of public assembly unless 12 inches of cover are provided, in addition to the three feet normally required over the pipeline. This setback, however, pertains only to the siting of new pipelines. The Federal Housing Administration denies financing for any residential structure located less than 10 feet from the outer boundary of a liquids or gas transmission pipeline easement. Pipeline easements range between 50 and 100 feet, so the effective setback [from the centerline of the pipe] would be between 35 and 60 feet. The setback distance appears to be based on industry practice.

The American Petroleum Institute recently conducted an analysis of the damage radius of liquids pipeline accidents. The analysis showed that 67 percent of the deaths and damage and 75 percent of the injuries caused by liquids pipeline failures took place within 150 feet of the point of discharge. These results could be interpreted to provide support for minimum building setbacks of 150 feet from existing pipelines to provide a good margin of safety."

GOAL 6.0: Minimize risks to life and property from pipelines transporting petroleum products.

Policy 6.1: Ensure that the Fire Department and other disaster response agencies have access to route, depth and shut-off information about each line.

Policy 6.2: Consult with agencies operating these lines as well as the Public Utilities Commission and Office of Pipeline Safety of the Department of Transportation to determine real potential for explosion or rupture in case of accident or earthquake.

AND ESTABLISHED
PIPELINE ROUTES

Policy 6.3: For new development, maximize building setback from existing pipelines to a preferred depth of 150 feet where PHYSICALLY feasible, but in no event less than 50 feet. Whenever development is proposed within 150 feet of petroleum pipelines, site plans must clearly show pipeline locations and all measures proposed to mitigate potential safety hazards. ~~Prior to the issuance of a building permit~~, the applicant must ~~sign a "hold harmless" agreement with the City~~.

Policy 6.4: Ensure that the Disaster Preparedness Emergency Plan includes procedures to deal with a pipeline accident.

3.7 EMERGENCY PROCEDURES

Issue Summary

The City of Ontario has completed a Disaster Preparedness Emergency Plan, which documents City policies to respond to major emergencies which threaten life, safety and belongings. Public schools function as emergency shelters in time of disaster. Persons living or working in an area struck by a disaster should report to the appropriate shelters, as directed by local public safety officials.

Definition of evacuation routes is dependent on the nature and extent of the disaster. Figure HA-5 shows generalized evacuation routes for Ontario. Not all routes are likely to be open in event of flood or earthquake. Residents and workers should proceed as directed by public officials.

The most important component of emergency preparedness is to ensure a basic supply of necessities in the home and workplace. Every home and business should have emergency provisions set aside for use in the event of earthquake or other major disaster, including food and potable drinking water.

GOAL 7.0: Ensure the continuity of vital services and functions in an emergency.

Policy 7.1: Maintain and regularly review and update the City's Disaster Preparedness Emergency Plan.

CITY OF ONTARIO DRAFT GENERAL PLAN EIR
(EXCERPT)

might happen, nor do they eliminate the possibility of a crash occurring outside these Air Safety zones. General Plan Air Safety Zones are based on normal flight paths. When aircraft become disabled, however, they are likely to deviate from the normal flight path, either because the aircraft cannot be controlled or because the pilot is taking the most direct route to the runway.

A recent fatal crash at Ontario International Airport occurred almost two miles from the airport, where no air safety zones would be designated. Although Ontario International Airport has an excellent safety record and land use compatibility guidelines for air safety will be implemented as part of the General Plan, there will always remain a possibility that an accident will occur outside the defined zones.

Although land use compatibility guidelines for Air Safety Zones indicate reduced density and intensity of development within Approach Safety Zones, there is already substantial development in the western Approach Safety Zone at an intensity which exceeds the guidelines. The General Plan does not provide plans or programs to abate this condition. Residents and workers will continue to be exposed to injury in case of aircraft accident. Thus a significant adverse impact will remain.

Petroleum Pipelines

The Transportation Research Board of the National Research Council has published a report entitled *Pipelines and Public Safety* [Special Report # 219, 1988], which analyzes damage prevention, land use and emergency preparedness with respect to petroleum pipelines. The report describes an analysis by the American Petroleum Institute (1987), which showed that two-thirds of the deaths and damage and three-fourths of the injuries caused by liquids pipeline failures took place within 150 feet of the point of discharge. "These results could be interpreted to provide support for minimum building setbacks of 150 feet from existing pipelines to provide a good margin of safety" (page 67). The same study also points out, however, that the overall risk of a fatal pipeline accident at any given point is relatively low. Average annual deaths from pipeline accidents number about 30 nationwide, as compared with over 1,100 annual aviation fatalities and almost 47,000 highway deaths.

The Hazards Element of the General Plan contains goals and policies designed to mitigate the effects of development adjacent to the petroleum pipelines that cross Ontario. These policies include a provision that setbacks from the pipeline to maximized to a preferred distance of 150 feet, but in no event less that 50 feet. All site plans for construction within 150 feet of existing pipelines must clearly show pipeline locations and safety mitigation measures. Applicants who build within the 150 foot preferred setback must also sign a "hold harmless" agreement with the City prior to issuance of a building permit.

Land use policy proposed within the Town Center and East Holt Boulevard areas is affected by the proximity of these districts to the 20-inch and 16-inch pipelines in the Southern Pacific right-of-way. Within the Town Center, an educational/commercial complex, an AMTRAK station, and regional office commercial development are proposed north of the pipeline. Light industrial/commercial service uses (also called Innovators Square) are proposed to the south.

Development guidelines for the educational/commercial complex call for placement of high intensity academic uses no closer than 200 feet to the railroad lines. Parking and unspecified low intensity uses are permitted within the 200 foot setback. The development guidelines for the regional office/commercial center do not specify a setback from the railroad right-of-way, but do indicate that parking is to be provided at the rear of the development area, creating a potential safety setback from the pipelines.

Assuming that only storage buildings, parking or very low occupancy uses are permitted in that portion of the educational/commercial complex nearest the railroad right-of-way, proposed land uses in this portion of the Town Center do not increase the risk of death or injury in the event of a pipeline accident.

Development guidelines for light industrial/commercial (Innovators Square) areas of the Town Center do not specify a setback from the railroad lines or pipelines. Uses permitted in these areas include lower intensity industrial uses such as wholesaling and warehousing, but also include more intense development such as restaurants and fast food outlets. Development in this area will be protected by maximizing the setback and by making sure site plans show all pipelines, so that building occupants are aware of them.

The proposed AMTRAK station will be the single use most affected by the location of the pipelines. Because the station must be adjacent to the tracks, high intensity use must also be located in close proximity to the pipelines. In vicinity of Emporia and Lemon Street where the station is proposed to be located, the 16-inch line is routed as much as 100 feet north of the tracks. T 20-inch line is located immediately north of the tracks, as shown in Figure 1 The AMTRAK station will lie between the two petroleum pipelines, a cond which is considered a significant adverse impact, but one which would occ wherever the station might be located along the rail line.

Within the East Holt area, commercial service/wholesale, neighborhood community retail, warehouse/showroom and airport related services uses proposed north of the two pipelines. Within the commercial service/who areas (Areas 2 and 3 on Figure 7) and the airport service commercial (Areas 9 and 11 on Figure 7, rear yard setback along the railroad righ established as 8 feet, with a required 10 foot high sound wall. Minim setbacks for the community and neighborhood retail areas (Areas 4b Figure 7) are not specified.

These setback criteria would not provide an adequate level of safety in the event of a pipeline accident. Potential adverse impacts would be most significant in high intensity commercial uses (such as offices, cultural activities, community assembly, hotels, entertainment, restaurants) permitted in Areas 9 and 11, and to a somewhat lesser extent in Areas 4b and 4c. Maximizing the setback as stipulated in the General Plan Hazards Element would reduce potential impact. However, the shallow lot depths which characterize the East Holt area, especially Areas 9 and 11, will mean that pipeline setbacks in East Holt will not be as substantial as they are Downtown.

MITIGATION MEASURES

Goals and policies in the Airport Environs and Hazards Elements provide mitigation regarding aircraft accident, transportation of hazardous materials and pipeline accidents. These goals and policies include:

HAZARDS ELEMENT

GOAL 5.0: **MINIMIZE RISKS TO LIFE AND PROPERTY ASSOCIATED WITH HANDLING, TRANSPORTING, TREATING, GENERATING, AND STORAGE OF HAZARDOUS MATERIALS.**

Implementation Policies

5.1: Incorporate the County of San Bernardino Hazardous Waste Management Plan by reference and adopt a Hazardous Waste Ordinance which sets forth siting criteria tailored to the needs of the City of Ontario.

5.2: Vigorously prosecute unlicensed dumping of toxic or hazardous materials into the ground or water in Ontario. Increase the fines levied for illegal dumping. Encourage citizens to report dumping when they observe it.

5.3: Support the efforts to enforce State "right to know" laws, which outline the public's right to information about local toxics producers.

5.4: Prohibit construction of new residential development near businesses producing, using or storing hazardous materials.

5.5: Through the Development Code, establish standards for storage of industrial chemicals and other potentially hazardous substances.

5.6: Minimize the amount and toxicity of hazardous waste and materials generated in the city by encouraging recycling, source reduction technologies and educational assistance to local residents, commercial [illegible] industrial handlers.

GOAL 6.0: MINIMIZE RISKS TO LIFE AND PROPERTY FROM PIPELINES TRANSPORTING PETROLEUM PRODUCTS.

Implementation Policies

6.1: Ensure that the Fire Department and other disaster response agencies have access to route, depth and shut-off information about each line.

6.2: Consult with agencies operating these lines as well as the Public Utilities Commission and Office of Pipeline Safety of the Department of Transportation to determine real potential for explosion or rupture in case of accident or earthquake.

6.3: For new development, maximize building setback from existing pipelines to a preferred depth of 150 feet where feasible, but in no event less than 50 feet. Whenever development is proposed within 150 feet of petroleum pipelines, site plans must clearly show pipeline locations and all measures proposed to mitigate potential safety hazards. ~~Prior to the issuance of a building permit, the applicant must sign~~ a ~~"hold harmless" agreement~~ with ~~the city~~.

6.4: Ensure that the Disaster Preparedness Emergency Plan includes procedures to deal with a pipeline accident.

GOAL 7.0: ENSURE THE CONTINUITY OF VITAL SERVICES AND FUNCTIONS IN AN EMERGENCY.

Implementation Policies

7.1: Maintain and regularly review and update the city's Disaster Preparedness Emergency Plan.

7.2: Participate in regional emergency preparedness planning.

7.3: Sponsor and support public education programs for emergency preparedness and disaster response. Distribute information about the emergency plan to community groups, schools, churches and business associations. Hold emergency drills in various parts of Ontario to test the effectiveness of emergency preparedness plans.

7.4: Include procedures for response to aircraft, rail, pipeline and hazardous material accidents in the Emergency Plan.

7.5: Periodically review emergency shelters to ensure that emergency equipment and supplies are available.

AIRPORT ENVIRONS ELEMENT

GOAL 3.0: PROTECT RESIDENTS AND WORKERS WITHIN AIR SAFETY ZONES FROM EXCESSIVE EXPOSURE TO ACCIDENT POTENTIAL.

Implementation Policies

3.1: Adopt and implement airport land use compatibility guidelines for air safety in Figure 19.

3.2: Establish a Floor Area Ratio of 0.25 within the Approach Safety Zone.

3.3: Continue to consult with the FAA on height of structures within the Part 77 approach surfaces of the airport environs.

Intensification of land uses in the Town Center and East Holt Boulevard areas will result in increased daytime and resident population adjacent to the 20 inch and 16 inch pipelines. It will therefore increase the number of people exposed to danger in the event of a pipeline leak, rupture or explosion. Both existing and proposed land uses in the vicinity of the two pipelines are more intensive on the north side of the right-of-way than on the south.

For the AMTRAK station, the city should consult with safety experts knowledgeable about pipeline hazards on the design and materials used in construction of the platform and station. However, little can be done to protect the safety of travellers on the passenger platform in the event of a train derailment in the station, whether or not a pipeline rupture accompanies it.

Because of the limited mitigation available for the AMTRAK station with respect to the pipelines, the risk of upset will remain a significant adverse impact which cannot be mitigated.

CITY OF COMMERCE

Artemio E. Navarro, Mayor
Robert J. Cornejo, Mayor Pro Tem
Ruth R. Aldaco, Councilmember
Ruben C. Batres, Councilmember
James B. Dimas, Sr., Councilmember
Louis Shepard, City Administrator

August 6, 1991

Patricia Chamberlaine, City Administrator
P.O. Box 10
Adelanto, CA 92301

Dear Ms. Chamberlaine:

Thank you for the opportunity to respond to the Cajon Pipeline Project, Notice of Preparation for Draft Environmental Impact Statement/Environmental Impact Report.

The City of Commerce has the following comments:

1. Figure 2-1, project vicinity map does not list all the affected cities. Please clarify this .

2. Page 9, list of agencies contacted, state agencies - The State Regional Water Quality Board should be notified about this project that may impact the quality of drinking water in their jurisdiction.

3. Page 10, The Los Angeles County Public Works Department is not listed. This Department maintains and operates the flood control channel system within the route being proposed.

4. Page 13, The United States Environmental Protection Agency, Region 9, San Francisco is not listed. The EPA has placed a portion of the San Gabriel Valley and Whittier Narrows Area on the Federal superfund list requiring a massive cleanup of the water table and existing wells.

5. The Federal Emergency Management Agency (FEMA) is not listed. FEMA has named some areas contemplated for Cajon Pipeline Project as being severely impacted by flooding and requiring special design, construction and insurance requirements.

I have enclosed a recent article regarding ground water contamination in the vicinity of the proposed project but without a clear and concise Project Vicinity Map it is not

2535 Commerce Way • Commerce, California 90040 • (213) 722-4805 •FAX# (213) 726-6231

RECEIVED
AUG 8 1991
CITY OF ADELANTO

At a time when cities in the Los Angeles Basin are grappling with ground water contamination, underground tank laws, and the enforcement of the provisions of the Clean Water Act it is amazing that a project with the potential of further contaminating the drinking water of a large metropolitan area would be proposed to be constructed in portions of the percolation basin and flood control channels of Los Angeles County.

Can the applicant for this project provide insurance or guarantees that the project will not further pollute the local ground water?

We hope that some of the other various agencies not on your initial list will be given the opportunity to comment on the proposed project. Mr. Bob Zarrilli, Senior Planner, can be contacted at (213) 722-4005, if you require any addition information regarding this matter.

Sincerely,

Raymond C. Ramirez

Raymond C. Ramirez
Assistant Director
Community Development

RCR/lr

Enclosures

c2/LTCHAM

Los [illegible] Tribune
8/1/91

Groups clean water

Norwalk will be the lead agency of a nine-city group that will try to stop contaminated ground water from flowing into this area from the San Gabriel basin.

The group, which conducted its first meeting July 15 in Norwalk City Hall, will seek federal funds and erection of treatment plants in the Whittier Narrows area to halt the flow.

That flow is heading toward this area at a rate of three feet a day and will reach Norwalk in several years if not stopped, said City Manager Richard R. Powers, instrumental in forming the alliance.

Mayor Robert Wagner of Lakewood has been named chairman of the group and Council member Luigi Vernola of Norwalk, vice chairman.

As lead agency Norwalk staff will handle the administrative duties, said Dan Keen, deputy city manager.

The group includes: Lakewood, Commerce, Santa Fe Springs, Whittier, Paramount, Pico Rivera and La Mirada.

Two water agencies involved are the Central Basin Municipal Water District, based in Downey but moving to Carson; and the Central Basin Water Replenishment District, based in Cerritos.

The latter group buys used and fresh water to spread in the area and replenish the ground water supply.

Its sister agency is charged with buying water from the Metropolitan Water District and selling it to city and private distributors to supplement the ground water supply.

Keen said the water group will meet at 7 p.m. the first Thursday of each month in Norwalk.

At the next meeting plans will be discussed to hire the Furgeson Company, a Washington D.C. lobbying group, to help seek federal money.

Furgeson is the lobbying agent for a similar, six-city group overseeing planned widening of the I-5 Freeway from the 91 Freeway in Orange County to Los Angeles in the next couple of years.

That group consists of Buena Park, La Mirada, Norwalk, Sants Fe Springs, Downey and Commerce, all affected by the planned widening.

The I-5 group, headed by Norwalk Mayor Mike Mendez, meets the fourth Thursday of each month at 1:30 p.m. at Norwalk or Buena Park city halls, Keen said.

FLOOD HAZARD INFORMATION

The entire City of Commerce has been identified by the Federal Emergency Management Agency (FEMA) on Federal Insurance Administration Flood Insurance Rate Maps (FIRM) as being located in ZONE C, areas of minimal flooding. Zone C is outside the 500-year flood boundary.

REFERENCES:

Federal Emergency Management Agency
Federal Insurance Administration
National Flood Insurance Program
Flood Insurance Rate Maps

Community Panel Numbers:

065043 0850 (NOT PRINTED) Revised: November 15, 1985
065043 0930 (NOT PRINTED) Revised: November 15, 1985
065043 0935 (EFFECTIVE 12/2/80) Revised: November 15, 1985

QUESTIONS SHOULD BE DIRECTED TO:

Emergency Management Specialist, Southern California Area
Federal Emergency Management Agency
Flood Branch, Region 9
The Presidio, Building 105
San Francisco, CA 94129
(415) 923-7177 or (415) 923-7100

FLOOD INSURANCE RATE MAPS CAN BE ORDERED FROM:

Federal Emergency Management Agency
Flood Map Distribution Center
6930 (A-F) San Tomas Road
Baltimore, MD 21227-6227
(800) 638-6620 or (800) 424-8872

B/JFIRM

CITY OF BELL GARDENS

7100 GARFIELD AVE., BELL GARDENS, CA 90201-3293
(213) 806-4500

August 5, 1991

Patricia A. Chamberlaine, City Administrator
City of Adelanto
11600 Air Base Road
Adelanto, CA 92301

Re: Notice of Preparation, Cajon Pipeline Project

Dear Ms. Chamberlaine:

Thank You for the opportunity to comment on the proposed Cajon Pipeline project. I have two comments, one regarding the exhibits sent to this city, and second, issues that should be addressed in the environmental impact report.

First, the Cajon Pipeline Route Map, Sheet 22-1A, incorrectly shows the pipeline route passing through a corner of the City of Bell Gardens. The municipal boundary between Bell Gardens runs within the channel of the Rio Hondo Flood Control Channel. It is my understanding from Mr. Matt Elliott of the Cajon Pipeline Company, Limited, that the pipeline will be buried within the east dike of the flood control channel, therefore at no point will the pipeline be within the corporate limits of the City of Bell Gardens.

Second, although skirting the City boundary, we have concerns regarding the risk such a pipeline presents to our residents. Issues that should be addressed should include:

- Water/Groundwater Contamination;
- Hazardous Material/spills/surface discharge into existing WQCB spreading basins and Rio Hondo Channel adjoining proposed route;
- Risk-of-Upset, from earthquake, accident;
- Impact of project on planned Army Corp of Engineer's raising the banks of the Rio Hondo as a preventative flood control measure; and

RECEIVED
AUG 7 1991
CITY OF ADELANTO

- Impact on existing riding and hiking trail on the east bank of the Rio Hondo.

If you have any questions, please do not hesitate to call me at (213) 806-4500, or FAX to my attention at 213/928/6284.

Sincerely,

James W. Mc

James W. McIntyre, AICP
City Planner

cc: Matt Elliott, Cajon Pipeline Company, Limited
Ken Farsing, Director of Community Development, City of Downey

G:\L-PC0805

CITY OF LONG BEACH
DEPARTMENT OF PLANNING & BUILDING
333 WEST OCEAN BLVD. • LONG BEACH, CALIFORNIA 90802
(213) 590-6651
FAX (213) 590-6753

July 26, 1991

Patricia Chamberline, City Administrator
P. O. Box 10
Adelanto, CA 92301

Dear Ms. Chamberline:

Subject: Joint Environmental Impact Statement/Environmental Impact Report
Cajon Pipeline Project

Thank you for the Notice of Preparation on this project.

The Project Vicinity Map and Pipeline Route Description is not of sufficient detail to determine if the project will directly affect the City of Long Beach. A more detailed route description is needed.

The "Preliminary List of Issue(s) to be Addressed" is too abbreviated to determine the issues to be covered in the EIS/EIR document. It would have been helpful to use a CEQA environmental checklist to insure the identification of all relevant environmental issues. Due to the brevity of the environmental list, any incompleteness will not be determined until the circulation of the Draft EIS/EIR for comments and response.

The following comments are provided in response to the list of environmental issues to be addressed:

1) Air Quality

We presume the air quality section will include an emissions inventory, impact analysis, construction particulate emissions and will address the impact on the South Coast Air Quality Management Plan.

2) Geology

Earthquake fault zones and their potential impact on the project should be identified.

Potential seismically induced accidents, hazards and safety procedures should be addressed under this section, in a a separate hazards section, or under Section No. 6.

JUL 2[illegible] 1991

3) Land Use

Project's impact and compatibility with adjacent land uses should be addressed.

4) Onshore Water Resources

Construction and potential spill impacts should be addressed.

7) Transportation

Disruption of transportation facilities and beneficial pipeline impacts should be covered.

9) Terrestrial Biology

Construction, operational and potential accident impact on animal life and plant life should be addressed.

In addition, aesthetic impacts on rural and urban areas should be addressed.

Please put the City of Long Beach on the circulation list for the Draft EIS/EIR document and change the contact person from Dennis L. Eschen, Zoning Administrator, to Gerry Felgemaker, Environmental Planning Officer.

Sincerely,

Gerry Felgemaker
Environmental Planning Officer

GHF:LK:kd
letter4.ghf

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, *Governor*

DEPARTMENT OF FISH AND GAME
330 Golden Shore, Suite 50
Long Beach, California 90802
(213) 590-5113

August 12, 1991

Ms. Patricia Chamberlaine
City of Adelanto
P. O. Box 10
Adelanto, California 92301

Dear Ms. Chamberlaine:

Notice of Preparation of a Draft Environmental Impact Report for the El Cajon Pipeline Project (SCH 91082007)

To enable our staff to adequately review and comment on subject project, we recommend the following information be included in the Draft Environmental Impact Report:

1. A complete assessment of flora and fauna within and adjacent to the project area, with particular emphasis upon identifying sensitive and critical habitats.

2. A discussion of direct, indirect, and cumulative impacts expected to adversely affect biological resources, with specific measures to offset such impacts.

3. A discussion of potential adverse impacts from any increased runoff, sedimentation, soil erosion, and/or urban pollutants on streams and watercourses on or near the project site, with mitigation measures proposed to alleviate such impacts. Stream buffer areas and maintenance in their natural condition through non-structural flood control methods should also be considered in order to continue their high value as wildlife corridors.

More generally, there should be discussion of alternatives to not only minimize adverse impacts to wildlife, but to include direct benefit to wildlife and wildlife habitat. Those discussions should consider the Department of Fish and Game's policy that there should be no net loss of wetland acreage or habitat values. We oppose projects which do not provide adequate mitigation for such losses.

RECEIVED
AUG 19 1991
CITY OF ADELANTO

Diversion, obstruction of the natural flow, or changes in the bed, channel, or bank of any river, stream, or lake will require notification to the Department of Fish and Game as called for in the Fish and Game Code. Notification should be made after the project is approved by the lead agency.

Thank you for the opportunity to review and comment on this project. If you have any questions, please contact Kim McKee at (213) 590-5137.

Sincerely,

R. E. Mall for

Fred Worthley
Regional Manager
Region 5

cc: Office of Planning & Research

CITY OF
San Bernardino

DEPARTMENT OF PLANNING AND BUILDING SERVICES
AL BOUGHEY, AICP
DIRECTOR

July 30, 1991

Patricia Chamberlaine
City Administrator
P. O. Box 10
Adelanto, CA 92301

RE: Cajon Pipeline Project EIR/EIS

Dear Ms. Chamberlaine:

Thank you for the opportunity to comment on the Notice of Preparation. The pipeline doesn't appear to go through the City of San Bernardino, but may be within our sphere of influence. We would like to review the draft EIR/EIS when it is available to determine if there will be impacts to our City.

Sincerely,

John Montgomery

John Montgomery, AICP
Principal Planner

JM:das
CajonPipeline

RECEIVED
AUG 1 1991
CITY OF ADELANTO

PRIDE IN PROGRESS

300 NORTH 'D' STREET, SAN BERNARDINO, CALIFORNIA 92418-0001 (714) 384-5071/5057

THE CITY OF
RANCHO CUCAMONGA

August 21, 1991

Patricia Chamberlaine, City Administrator
City of Adelanto
P.O. Box 10
Adelanto, California 92301

SUBJECT: CAJON PIPELINE PROJECT

Dear Ms Chamberlaine:

Thank you for the opportunity to comment on the Notice of Preparation for the proposed 126 mile, twenty (20) inch diameter, insulated pipeline which will transport heavy crude oil from 27 miles west of Barstow to Carson, California.

The information received did not include the preliminary alignment, Figure 2-3. Please clarify the preferred route and identify alternatives in the vicinity of Rancho Cucamonga. In addition, provide a detailed discussion of the impacts of each alternative from the perspective of construction and maintenance. Also, discuss for each alternative impacts of the worst case spill scenario. See attached memo, August 13, 1991.

When available, please send a copy of the draft Environmental Impact Report for review and comment to the attention of Miki Bratt, Planning Division. If you have any questions, please contact Ms. Bratt or myself at (714) 989-1861, or Betty Miller at (714) 989-1862.

Also, please send a copy of the draft EIR to Lloyd Almand, Deputy Chief Fire Marshall, Rancho Cucamonga Fire Protection District, 6623 Amethyst Avenue, Rancho Cucamonga, California 91701. The Fire District is an independent agency serving the City and has shared responsibility with the County for hazardous spill incidents.

Sincerely,

COMMUNITY DEVELOPMENT DEPARTMENT
PLANNING DIVISION

L. J. Henderson

L.J. Henderson, AICP
Principal Planner

RECEIVED
AUG 25 1991
CITY OF ADELANTO

LJH:MB:js

cc: Lloyd Almand
Betty Miller

Attachment

Mayor Dennis L. Stout
Mayor Pro-Tem William J. Alexander
Jack Lam, AICP, City Manager

Councilmember Diane Williams
Councilmember Pamela J. Wright
Councilmember Charles J. Buquet II

10500 Civic Center Drive • P.O. Box 807 • Rancho Cucamonga, CA 91729 • (714) 989-1851 • FAX (714) 98[illegible]

CITY OF RANCHO CUCAMONGA

MEMORANDUM

DATE: August 13, 1991

TO: Miki Bratt, Associate Planner

FROM: Betty A. Miller, Associate Engineer BAM

SUBJECT: Government Referral 91-12
Notice of EIR Preparation for Cajon Pipeline

The package which we received did not include the preliminary alignment, Figure 2-3; therefore it is difficult to tell the extent to which the subject project will impact the City of Rancho Cucamonga. In the "Pipeline Route" description it is indicated that the pipeline will follow Interstate 15 through Cajon Pass to Ontario and that major portions of the route follow flood control channels.

Considerations which the EIR should address include:

1. Possible hazards associated with pipeline rupture within or near residential areas, schools, commercial centers, ground water recharge facilities, storm drainage channels, etc.
2. Constraints associated with crossing other facilities, such as drainage channels, MWD pipelines, freeway interchanges, etc.

The City shall be contacted during preparation of the EIR regarding existing and proposed facilities along the route. Note also that the following agencies should review and comment on the EIR: Southern California Edison, Metropolitan Water District, and Southern California Gas.

BAM:dlw

DEVELOPMENT RELATED AGENCIES

CABLE TV:

DCA Cable (1)*
9155 Archibald, Suite H
Rancho Cucamonga, CA 91730
(714) 987-2225

Scott Cable dba (2)*
Simmons Cable
9524 19th Street
Rancho Cucamonga, CA 91701
(714) 987-7122

CALTRANS:

California Department of Transportation
District 8
247 E. Third Street
P.O. Box 231
San Bernardino, CA 92403
(714) 383-4536
Encroachment Permit
(714) 383-4229
Public-Information

ELECTRICITY:

Southern California Edison Co.
7951 Redwood Avenue
Fontana, CA 92336
(714) 986-5861

FIRE:

Rancho Cucamonga Fire Protection Agency (3)*
6623 Amethyst Street
Rancho Cucamonga, CA 91701
(714) 987-2535

FLOOD CONTROL DISTRICT:

San Bernardino County Flood Control Dist.
825 East Third Street
San Bernardino, CA 92415
(714) 387-2800

GAS:

Southern California Gas Company
1050 Overland Court
P.O. Box 97
San Dimas, CA 91773
(714) 592-1799

RAILROADS:

Atchison, Topeka and Santa Fe Railway Co.
5770 S. Eastern Ave.
Los Angeles, CA 90040
(213) 889-7500

Southern Pacific Transportation Co.
1200 Corporate Center Dr.
Monterey Park, CA 91754-7605
(213) 668-4848

CITY HALL (10)*

10500 Civic Center Drive
Rancho Cucamonga, CA 91730

SCHOOLS:

Alta Loma School District (4)*
9350 Base Line Road, #F
Rancho Cucamonga, CA 91701
(714) 987-0766

Central School District (5)*
9457 Foothill Boulevard
Rancho Cucamonga, CA 91730
(714) 989-8541

Cucamonga School District (6)*
8776 Archibald Avenue
Rancho Cucamonga, CA 91730
(714) 987-8942

Etiwanda School District (7)*
5959 East Avenue
P.O. Box 248
Rancho Cucamonga, CA 91739
(714) 899-2451

Chaffey High School District
211 West 5th Street
Ontario, CA 91762
(714) 988-8511

SEWER: (See CCWD under Water)

TELEPHONE:

General Telephone Company
585 N. Mountain Avenue
Upland, California 91786
(714) 949-8108

WATER:

Cucamonga County Water District
(CCWD) (8)*
(Water and Sewer)
9641 San Bernardino Road
P.O. Box 638
Rancho Cucamonga, CA 91730
(714) 987-2591

Chino Basin Municipal Water (9)*
District
8555 Archibald Avenue
P. O. Box 697
Rancho Cucamonga, CA 91730
(714) 987-1712

Metropolitan Water District
700 N. Moreno Avenue
La Verne, California 91750
(714) 593-7474

San Gabriel Valley Municipal
Water
P.O. Box 1299
Azusa, California 91702
(818) 969-7911

City Hall Phone Nos.

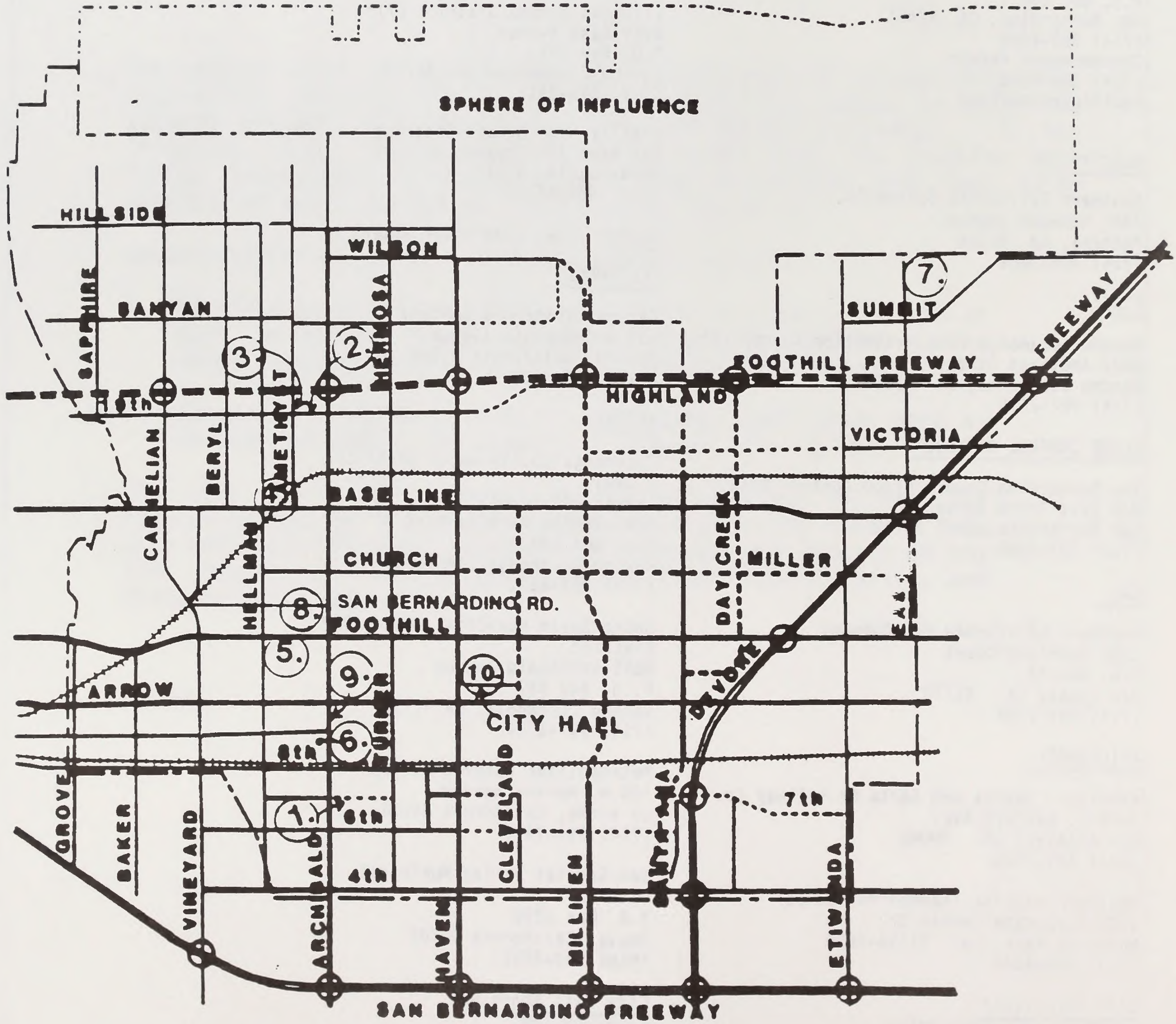
(714-989-1851

Building	989-1863
Engineering	989-1862
Planning	989-1861

* Located within City - see corresponding map number on reverse

REV. 7/10/90

VICINITY MAP



CITY OF
RANCHO CUCAMONGA

City of Downey

FUTURE UNLIMITED

August 21, 1991

Patricia A. Chamberlaine, City Administrator
City of Adelanto
11600 Air Base Road
Adelanto, CA 92301

SUBJECT: **Notice of Preparation, Cajon Pipeline Project**

Dear Ms. Chamberlaine:

The City of Downey has reviewed the NOP for the Cajon Pipeline Project. We understand that the pipeline will be buried under the eastern portion of the Rio Hondo Channel. This means that the pipeline will fall within the City of Downey—our corporate boundary follows the Rio Hondo's centerline and a portion of the channel falls entirely within our City.

We have been consulting with the Army Corps of Engineers and the Federal Emergency Management Agency on future plans to raise the banks of the Rio Hondo. This work is of the utmost importance to Downey. Without the raising of the banks, 60% of the Downey's 13 square miles will be subject to 100-year floodwaters. This will require property owners to obtain flood insurance and new developments to include floodproofing measures. The City of Downey and neighboring cities have been negotiating with FEMA to delay implementation of floodproofing requirements until after the Army Corps of Engineers has completed its planned improvements to the river channel.

The questions we would like answered in the Environmental Impact Report for the Cajon Pipeline are these: *Will the Cajon Pipeline Project delay in any way planned improvements by the Army Corps of Engineers to the Rio Hondo Channel? Will the presence of the pipeline in any way diminish the carrying capacity of Rio Hondo either before or after the planned improvements?* We cannot stress strongly enough our interest in these questions. Any delay in improvements to the Rio Hondo will result in Downey landowners having to pay millions of dollars in flood insurance and floodproofing measures.

Because the affected portion of the Rio Hondo runs adjacent to residential neighborhoods and Downey's municipal golf course, we expect that the EIR will also identify measures to protect land and groundwater from contamination in the event of an earthquake or pipeline leak. The effects on Rio Hondo improvements, however, are by far our most pressing concern.

Please send a copy of the Draft Environmental Impact Report, when it is completed, to Mr. Mark Sellheim of our planning division. If you have any questions, please feel free to contact me at (213) 869-7331, ext. 232.

Sincerely,

Art Rangel, AICP
Director of Community Development

RECEIVED
AUG 26 1991
CITY OF ADELANTO

cajon.wmd

11111 BROOKSHIRE AVENUE POST OFFICE BOX 607 DOWNEY, CALIFORNIA 90241-0607 (213) 869-7331

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

1991 SEP -3 PM 12 19

ROUTING		
TO	DATE	INT
DM 1	9/5	[illegible]
ADM 2	9/9	[illegible]
SA		
DSR		
P&EC 3		
PA		
Admin		
OPS		
L&RR		
MIN		
AMs		
ACTION BY: RETURN TO:		

August 20, 1991

Mr. Gerald E. Hillier
District Manager
Bureau of Land Management
6221 Box Springs Blvd.,
Riverside, CA 92507-0714

ATTN: Cajon Pipeline Project

Dear Mr. Hillier:

The Environmental Protection Agency (EPA) has reviewed the Notice of Intent to prepare an Environmental Impact Statement (EIS) for the proposed **Cajon Pipeline, San Bernardino and Los Angeles Counties, CA** as published in the Federal Register, Wednesday, July 24, 1991. Our review is provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality NEPA Implementation Regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act.

The proposed project consists of constructing a 20" diameter heated pipeline for the purpose of transporting approximately 150,000 barrels of heavy, high sulphur crude oil each day from a heater station 27 miles west of Barstow, CA to a crude oil terminal in Carson, CA, some 127 miles. The pipeline would traverse both private and public lands in San Bernardino and Los Angeles Counties.

We recommend that your EIS address the full range of environmental implications which would be associated with such a project, affording special attention to:

- identifying areas of critical environmental concern including unique or rare biota and areas with potential for significant environmental impacts;

- identifying impacts to water, floodplains, and wetlands, including identification of Section 404 Clean Water Act requirements and proposals to ensure compliance with those requirements;

- identifying impacts to air quality in light of the current air quality status within the proposed project area, and demonstrating that construction and operating activities would adhere to the conformity provisions of the new Clean Air Act as defined in Section 176(c).

- identifying threats from spills and/or ruptures associated with the pipeline and its "appurtenant facilities," and addressing the proposed means to minimize the potential for spills and ruptures. The EIS should include a spill prevention and spill response and cleanup plan.

- identifying a full range of alternatives, including alternative routes, alternative means to transport the material, and alternative means to achieve the desired end result, i.e., appropriately refined oil.

Your discussions should be conducted with as much specificity as possible to ensure environmental resources are afforded full protection in accord with all applicable regulations. Consequently, in the development of your NEPA documents, we encourage you to work closely with all other federal, state, and local regulatory agencies, as applicable.

We appreciate the opportunity to comment on the proposed project and request three copies of the DEIS when it is completed. If you have any questions, please contact me at 415-744-1584 (FTS 484-1584), or have your staff contact Mr. David Farrel at 415-744-1574 (FTS 484-1574).

Sincerely,

Carolyn Yale (for JW)

Jacqueline Wyland, Chief
Office of Federal Activities

91-206
001151

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, *Governor*

DEPARTMENT OF FISH AND GAME
330 Golden Shore, Suite 50
Long Beach, CA 90802
(310) 590-5113

December 20, 1991

RECEIVED
JAN 7 1992
EIP ASSOCIATES
LOS ANGELES, CA.

Mr. Rick Ware
Director, Resources Management
EIP Associates
80 South Lake Avenue
Pasadena, CA 91101

Dear Mr. Ware:

This is in response to your letter of October 21, 1991 requesting information on sensitive species along the proposed Cajon Pipeline alignment. Data regarding rare, threatened, and endangered species can be obtained at:

California Department of Fish and Game
Natural Heritage Division
Natural Diversity Data Base
1416 Ninth Street
Sacramento, CA 95814
(916) 322-2495

Department staff reviewing the EIR/EIS will be expecting the results of your data search using the NDDB to be included in the draft.

Generally, there are many listed species and species of special concern to the Department along the alignment. Any listed species that has the potential to be negatively impacted by this project must addressed pursuant to Fish and Game Code Section 2090, as required by the California Endangered Species Act (CESA). The State Lands Commission, as lead agency, must initiate an endangered species consultation with the Department for those affected species. Notification to the U.S. Fish and Wildlife Service will also be necessary for Federally-listed species.

One recent change in Department policy has occurred in regards to the State-listed Threatened Mohave ground squirrel (Spermophilus mohavensis). Information regarding the current policy and the methodology required to determine mitigation/compensation needs is enclosed.

Our regional contact for the State- and Federally-listed Threatened desert tortoise (Gopherus agassizii) is Mr. Frank Hoover, 4775 Bird Farm Road, Chino, 91709, (714) 597-8235.

Thank you for your early contact with us to discuss project impacts to the State's resources. If further questions arise, feel free to contact Kimberly McKee of our Environmental Services staff at (310) 590-4830.

Sincerely,
John W [illegible] for
Fred Worthley
Regional Manager
Region 5

Enclosure

State of California

McKee-R5

Memorandum

To : Mr. George Nokes, Regional Manager, R-4
Mr. Fred Worthley, Regional Manager, R-5
Mr. Red Hunt, Chief, WMD
Ms. Susan Cochrane, Chief, NHD
Mr. Donald Lollock, Chief, ESD

Date : May 28, 1991

From : **Department of Fish and Game**

Subject : The Mohave Ground Squirrel

The Mohave ground squirrel (MGS) has become a major issue in both regions 4 and 5. The Department of Fish and Game's analysis of project-related impacts to MGS and our recommended mitigation for these impacts has varied over time, in part due to different personnel and in part due to our gradually increasing knowledge of the species. Consequently, concern has been expressed that the Department is inconsistent in its review of projects potentially affecting MGS. In order to address this concern and to ensure consistent consideration of project impacts on MGS by Department representatives, the Department has formed an in-house MGS Working Group composed of Representatives from Region 4, Region 5, Natural Heritage Division (NHD), Wildlife Management Division and Environmental Services Division. This group met in Chino on March 18, and in Fresno on April 5, to discuss the most current information and understanding of MGS biology and habitat requirements and to consider the development of a consistent MGS mitigation strategy for the Department. Mr. Chuck Graves represented NHD at the Fresno meeting.

After two days of discussion the group reached a consensus on the following items:

1. MGS may occur in any habitat within their known range. Not enough is known about this species' requirements to precisely describe MGS habitat needs. The only apparent prerequisites are an adequate food source and areas in which they can excavate burrows.

2. Live-trapping should not be required of project proponents as it is not a conclusive method of determining presence or absence of MGS. (Sightings of MGS have been made in areas where trap grids were operated and the species was not captured.) Furthermore, presence or absence of MGS at any point in time from a specific location does not indicate the importance of the surveyed area for the long-term protection of the species. Data collected during the recent years reveal drought related, temporary local extinctions and population retrenchment.

3. MGS are found in both impacted and unimpacted areas within their range.

4. "Take" of MGS will occur concurrent with development throughout the species' range to the extent habitat has been modified.

5. Utilization of the "Cumulative Human Impacts" methodology developed by Region 4 during the Department's Indian Wells Valley Mohave Ground Squirrel study would provide a consistent approach to mitigation for project impacts on MGS.

6. Any guidelines must be amenable to modification as the level of our understanding of the species increases.

The recommendations of the Department's MGS Working Group are as follows:

1. All lands within the range of the MGS should be considered MGS habitat and any new impacts which reduce the land's usability by the species will require compensation. Existing and past cumulative impacts upon these development sites will be a consideration in determining the quantity of compensation required, based upon the evaluation procedure in No. 2 below. Impacts upon species other than MGS shall be considered on a project by project basis and integrated to the extent biologically practicable into the compensation required for MGS.

2. Within the range, the Department should require habitat surveys which utilize the "Cumulative Human Impacts" evaluation methodology and forms, (see attached). (The benefits to the developers of this methodology as opposed to trapping is that surveys may be undertaken at any time of year rather than being restricted to a three-month window.) Computation of compensation acreage ratios will range between 0 and 5:1 as a function of the degree of prior cumulative human-associated impact on the proposed development sites.

There may be areas within the range where habitat is truly unsuitable for MGS (e.g., extensive alkali playas). The Department representatives, following a site visit should use professional judgment to determine if MGS habitat surveys should be required. In any case it must be remembered that there may be other wildlife values that may be impacted and require mitigation. Any recommendation must examine that possibility.

The absence of historical sightings or captures in the area west of Rosamond, combined with only null data from recent trapping and visual surveys in that area suggest that the range boundaries identified in "At the Crossroads", may not truly represent the species' historic or present range. There are also other areas where the present range map may require modification to more accurately reflect the species' range. In areas where the range boundaries are uncertain, decisions on the need for studies or mitigation as a part of proposed development projects should be made and defended based upon the best available data and professional judgment at the time rather than just the maps in current use.

MGS distribution records are now being reviewed in detail by Region 4 and very soon will be distributed via the MGS Working Group. It is evident that both range reductions and extensions are indicated. This information will be made available as empirical data. At present, we recommend responding to individual project applications in these areas based upon "available data and knowledge", as is the case with all other species or resources in the California Environmental Quality Act and California Endangered Species Act processes. For consistency in marginal locations, the MGS Working Group and its members can provide a forum for discussion and guidance to Regional Managers or the Directorate regarding what project requirements can be biologically defended.

This memorandum should be used as a guide in addressing project review related MGS issues. Environmental Services Division has prepared a summary report of the existing MGS information including the rationale for the recommendations (attached).

If you have any questions or feel that a particular project should be handled differently than provided for in this memorandum, please contact Dr. Larry Eng, Environmental Services Supervisor, ATSS 492-5574, (916) 322-5574 to discuss your concerns.

COPY
Original Signed By:
F. T. Jensen
FOR
Pete Bontadelli
Director

Attachments

bc: See attached list

bc: Mr. Chuck Graves - NHD
Mr. John Gustafson - WMD
Mr. Larry L. Eng - ESD
Mr. Dale Mitchell - R4
Mr. John Beam - R4
Mr. Rod Goss - R4
Ms. Marti Kie - R4
Ms. Alice Low - R4
Ms. Ronda Reed - R4
Mr. Ron Remple - R4
Mr. Bruce Eliason - R5
✓ Ms. Kim McKee - R5
Mr. Dave Showers - ESD
Mr. Robert Radovich - ESD
Mr. Joe Vincenty - ESD
Mr. Andy Pauley - R5
Ms. Denise Racine - R5

MOHAVE GROUND SQUIRREL

There is general agreement that the principal threat to the continued existence of the Mohave ground squirrel is the destruction or degradation of its habitat. However, questions have been raised regarding what constitutes suitable habitat for this species. Information gathered through field studies and trapping surveys over the last three years, has caused the Department of Fish and Game to reevaluate what constitutes Mohave ground squirrel habitat. This information also indicates that trapping surveys alone provide insufficient data to determine that Mohave ground squirrels do not occupy a particular site. The best available biological information now suggests that habitat not currently occupied by Mohave ground squirrels may be extremely important and perhaps essential for the long-term survival of the species; therefore, **all land within the range of the Mohave ground squirrel should be considered habitat for the species.** [The range of the Mohave ground squirrel is the western Mojave Desert from southwestern Inyo County, south through eastern Kern, northwestern San Bernardino and northeastern Los Angeles counties (see attached map)]. The rationale for this determination is presented below.

Mohave ground squirrels are relatively short-lived animals with populations that tend to be spatially redistributed over time. The survival and persistence of Mohave ground squirrel populations are dependent upon the occurrence of seasonal rainfall which promotes the growth of shrubs, forbs and grasses which are the primary food of this species. Because rainfall is not evenly distributed in the desert areas inhabited by this species and because the storm tracks may vary from year to year, habitat conditions suitable for Mohave ground squirrels do not remain geographically constant. Rather, conditions may become suitable or deteriorate and become unsuitable, dependent upon the vagaries of the rainfall pattern. The result of this unequal and variable distribution of rainfall, and its effect on Mohave ground squirrel habitat, is that populations in one area may be extirpated while populations in other areas are being established. **This is a natural phenomenon, but it means that habitat not presently occupied by Mohave ground squirrel may be essential to the survival of the species.**

The recent drought has caused significant retrenchment of known populations and has resulted in local extirpations. Thus, Mohave ground squirrels are no longer found in areas where they occurred only a few years ago. However, there is every reason to expect that most of these areas will once again support the species once the drought is ended.

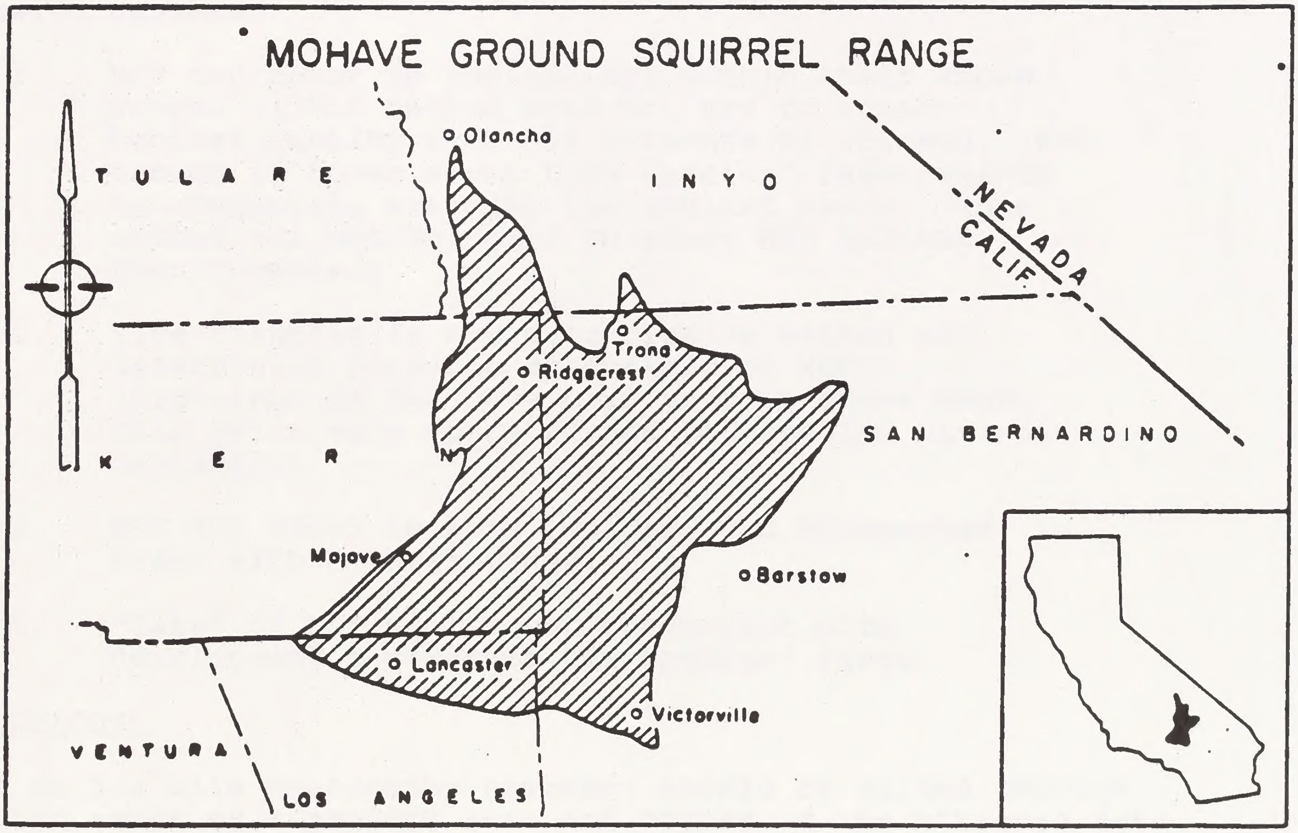
MGS Habitat: CDFG March 25, 1991

Mohave ground squirrels are relatively difficult to trap under any circumstances, with juveniles typically being much more vulnerable than adults. Biologists report seeing these ground squirrels while establishing trapline grids but subsequently failing to trap any individuals.

The drought has seriously reduced available forage for Mohave ground squirrels. Researchers report that adults are foregoing reproduction in order to save energy to survive estivation. The result is few if any young are being produced. Thus, the most vulnerable portion of the population to trapping (therefore, the one most likely to provide evidence that the species does occur within a given area) has been removed from the population.

Available evidence also indicates that adults require less time than juveniles to attain the fat reserves necessary to carry them through the period of estivation. As a result, they typically begin estivation weeks before the juveniles. Thus, during periods of severe drought when the juvenile segment of the population is not present because of reproductive failure, the time period when Mohave ground squirrels are vulnerable to observation and trapping would be substantially reduced.

Mohave ground squirrel habitat is difficult to define. A variety of habitat types within several vegetation communities dominated by creosote (Larrea tridentata), shadscale (Atriplex confertifolia) or Joshua tree (Yucca brevifolia) is utilized. Adequate forage is essential and soils suitable for burrowing (generally described as fine to medium texture) are important. However, there have been instances where other cover (e.g., rock/debris piles) has been utilized in lieu of burrows. Mohave ground squirrels may utilize apparently unsuitable habitat or habitat that has been substantially degraded provided local microhabitat exists. Therefore, superficial examination of habitat may result in a false assumption of no suitable habitat and, therefore, no Mohave ground squirrels.


MOHAVE GROUND SQUIRREL RANGE
Olancha
TULARE
INYO
NEVADA
CALIF.
Trona
Ridgecrest
SAN BERNARDINO
KERN
N
Mojave
Barstow
Lancaster
Victorville
VENTURA
LOS ANGELES

CUMULATIVE HUMAN IMPACT EVALUATION FOR MOHAVE GROUND SQUIRREL HABITAT

The cumulative human impacts evaluation was developed to aid the Department of Fish and Game in determining mitigation requirements for projects which affect Mohave ground squirrel (MGS) habitat by assessing cumulative human impacts to MGS habitat. The rating system was developed based on the Department's Indian Wells Valley Mohave ground squirrel study (Rempel and Clark, 1991). This method was developed for the following reasons:

1. MGS may occur in any habitat within their known range. (This method does not try to equate habitat quality with MGS presence or absence. Not enough is known about this species' requirements to adequately evaluate its habitat needs. This method was not designed to study MGS habitat requirements.)

2. Live-trapping is not a conclusive method of determining presence or absence of MGS. (Sightings of MGS have been made in areas where trap grids were operated and the species was not captured.)

3. MGS are found in both impacted and unimpacted areas within their range.

4. "Take" of MGS will occur concurrent with development throughout the species' range.

METHODOLOGY:

A 1/2 to 3/4 mile meandering transect should be walked through each 160 acres of a project area and copies of the attached data sheets completed. For projects less than 160 acres, the meandering transect should be reduced in length to fit within the parcel. A circular or "U"-shaped transect is most efficient and should be the design utilized for projects greater than 40 acres. On projects less than 40 acres, the entire project area should be encompassed by the transect(s). Notes should be taken concurrent with walking the meandering transect to assist in completing the Cumulative Impact Evaluation Form and the General Habitat Description Form upon completion of the meandering transect. The ranking factors (0-4) should be based on the criteria shown in the attached "Key to Cumulative Habitat Impact Assessment Form". If, after completing the meandering transect(s), uncertainty remains as to the rank of habitat impacts or other information required by the Cumulative Impact Evaluation Form, the meandering transect should be rewalked. The approximate location of the meandering transect(s) should be mapped on the project map and included as part of the data submission package. All land use impacts (OHV use, horse and foot traffic, dog activity, roads, urbanization, garbage dumping, mining activity, grazing/agricultural activity, shrub disturbance) should be rated for each transect.

General habitat information [shrub density (visual estimate), shrub species diversity, presence of annuals, presence of perennial grasses, presence of desert pavement, description of soils, presence of rocks and boulders and presence of washes] should also be recorded. A minimum of 4 color photos (3" x 5" or larger prints) of the project site where the transect(s) was walked should also be included in the data submission package.

A maximum rating of 40 is possible, with 40 representing the worst case condition for cumulative human impacts to the habitat and 0 representing habitat with no human-related disturbance. Completed data sheets should be submitted to the Department along with the project description. Following the Department's review of the submitted data, the Department will discuss the project's mitigation requirements with the project sponsor and incorporate the requirements into any 2081 Permit or California Environmental Species Act Biological Opinion issued for the project.

CUMULATIVE HABITAT IMPACT EVALUATION FORM

LOCATION: T_____; R_____; _____1/4 SEC_____

DATE: ________________________, 19_____

SITE: _____ (trapped _____; not trapped ____)

OVERALL RATING: ________________

==

(CIR range: 0 - 40) (Ranking factors: 0 - 4)

LAND USE IMPACTS (0 = none, 4 = heavily impacted):

1. OHV use ________________________
2. Horse or foot traffic __________
3. Dog activity ___________________
4. Roads through area _____________
5. Urbanization ___________________
6. Garbage dumping ________________
7. Mining activity ________________
8. Utilities ______________________
9. Grazing and/or agriculture _____
10. Shrub disturbance _____________

Average together the five most disturbed factors, then multiply by 10 for the cumulative impact rating (CIR).

GENERAL HABITAT DESCRIPTION:

1. Shrub density estimate: high _____; medium _____; low _____ (estimate % of each per 1/4 section)

2. Shrub species diversity: >6 _____; 3-5 _____; 1-2 _____

3. Presence of annuals: A _____; B _____; C _____

4. Presence of perennial grasses: A _____; B _____; C _____

5. Presence of desert pavement: (estimate % coverage) _______

6. Soils description: ____

____

7. Percent rocks and boulders present: (describe) ____________

____

____

8. Presence of washes: _____ Periodic flooding: ______________

9. Slope/Aspect: __________

10. Elevation: __________

OTHER FACTORS OF CONSIDERATION:

Type of grazing allotment:

perennial _____________________ ephemeral ____________________

Proximity to known MGS populations: _____________________________

____

____

Type of county zoning: ____

COMMENTS:

KEY TO CUMULATIVE HABITAT IMPACT EVALUATION FORM

LAND USE IMPACTS:

A. OHV use:
0 = none
1 = old evidence, little or no recent activity
2 = recent activity, not widespread (1-5 tracks)
3 = widespread and recent activity
4 = heavily impacted by dirt trails; established OHV trails

B. Horse and foot traffic:
0 = none
1 = seen, but must look carefully to find evidence (includes dog scat, trash, beer cans, etc.)
2 = moderate use; seen without much effort
3 = easily seen and widespread, but no established trails
4 = established trails

C. Dog activity: (domestic, not coyote or fox)
0 = none
1 = some tracks and/or scat seen, but no sign of digging
2 = tracks and scat seen; some digging seen
3 = two or more of the above signs easily seen
4 = all above signs easily seen; majority of shrubs dug under

D. Roads (including railroads) through the area:
0 = none through area; only roads in distance
1 = one interior dirt road and/or perimeter dirt roads
2 = two interior dirt roads and perimeter dirt roads
3 = two or more interior dirt roads and perimeter roads either paved or graded and maintained
4 = two or more interior maintained or well traveled roads and frequently used graded or paved perimeter roads

E. Urbanization:
0 = none to one building, outside the 1/4 section or Parcel and >1/4 mile distant
1 = one to two buildings within 1/4 mile of the 1/4 section
2 = isolated homes and farms within the 1/4 section; developed urban areas >1/4 mile distant
3 = developed urban areas adjacent to 1/4 section; but only isolated homes and farms within the 1/4 section
4 = developed urban areas within the 1/4 section

F. Garbage dumping:
0 = none, except for some litter blown in
1 = one to two areas with dump piles containing a few objects; or large amounts of litter blown in
2 = two to four small dump sites (large objects) (debris scattered)
3 = two to three large dump sites with several large objects (Heavier scattered trash)
4 = one or more large dump sites, containing many things and/or covering large areas

G. Mining activity:
0 = none
1 = old mine site, revegetating
2 = recent small scale "cat" or exploratory activity
3 = individual active mining claim
4 = large-scale active mine or devegetated mine site

H. Utilities:
0 = none
1 = telephone lines or similar wooden poles (check for stick nests and recent activity)
2 = major pipeline (above or under ground)
3 = high voltage or multiple transmission lines
4 = canal or aqueduct (impediment to movement)

I. Grazing and/or agriculture: (agriculture rated if 50% or less of 1/4 section
0 = no history of grazing or agriculture
1 = no grazing for 20 years or more; no agriculture
2 = old agricultural field or grazing allotment; reestablished to native shrubs (old grazing sign)
3 = in a grazing allotment; or old agricultural field with no native shrubs reestablished yet (recent grazing sign)
4 = area of cattle or sheep concentration (e.g., feed, watering or salt lick)

J. Shrub disturbance: (result of some human activity)
0 = none
1 = some damaged shrubs seen at site and occurrence is infrequent
2 = damaged shrubs easily found
3 = many shrubs disturbed; some completely destroyed
4 = many shrubs destroyed (crushed, trampled and with broken limbs)

GENERAL HABITAT DESCRIPTION:

1. Shrub density estimate: (% of each category within 1/4 section)

   High: __________ Medium: __________ Low: __________

2. Shrub species diversity:
   a. greater than six species present
   b. three to five species present
   c. one to two species present

3. Presence of annuals:
   a. good cover both under and between shrubs
   b. cover found primarily underneath shrubs
   c. none found

4. Presence of perennial grasses:
   a. numerous
   b. present but not numerous
   c. none found

5. Presence of desert pavement: (estimate % coverage within 1/4 section)

6. Soils description: (e.g., coarse gravelly soil, fine sandy soil, etc.)

7. Rocks and boulders: (estimate % coverage of rocks and boulders) describe location's coverage

8. Presence of washes (describe where within the 1/4 section) or areas of periodic flooding

OTHER FACTORS OF CONSIDERATION:

1. Type of grazing allotment: perennial or ephemeral; include any information about when area was last grazed, cattle or sheep grazing or both, etc.

2. Proximity to known MGS occurrences: include location of these occurrences, distance from 1/4 section, and date MGS were last recorded at that location, etc.

3. Type of county zoning: describe type and potential of area for development.

Revised 8P

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
San Bernardino National Forest
Star Route, Box 100
Fontana, CA 92336-9704

Reply to: 1560

October 21, 1991

RECEIVED
OCT 23 1991
EIP ASSOCIATES
LOS ANGELES, CA.

Mr. Rick Ware
EIP Associates
80 South Lake Avenue
Pasadena, CA 91101

Dear Mr. Ware,

Thank you for the opportunity to review the project description for the proposed Cajon Pipeline EIS/EIR. In addition to the EIS/EIR, and as part of the process for preparing these documents, a Biological Evaluation (BE) will need to be completed. This document is required for projects on National Forest lands that may affect any federally listed species. Guidelines for the preparation of a BE are included.

Cajon Wash is habitat for the least Bell's vireo, a federally endangered species, and for the Santa Ana speckled dace, a California Species of Special Concern. Effects to the vireo and the speckled dace, and other threatened, endangered and sensitive species must be addressed in the NEPA documents. A list of such species potentially to be found in the project area and a list of vegetation communities within the project area are enclosed.

Please note that the California gnatcatcher is currently under consideration by the US Fish and Wildlife Service for listing as an endangered species. This species was recently observed at the confluence of Cajon Wash and Lytle Creek. The loss of occupied California gnatcatcher habitat within the project area could significantly alter the range of the species. A spring survey to determine whether the species is present will be required.

Also, please be aware that Cajon Wash has been identified as the preferred site for introduction of unarmored threespine stickleback, a federally endangered species, by the recovery team for the species. Impacts to the habitat for this species should also be addressed. (For more information, please contact John Hanlon of the US Fish and Wildlife Service.)

Impacts to Forest Sensitive species on National Forest lands within and adjacent to the project area are likely, and mitigation for those impacts will be necessary. Of particular concern are riparian-associated birds, including Cooper's hawk, willow flycatcher (a state endangered species), and long-eared owl. Noise from construction activities during the breeding season could adversely affect the nesting success of these species. Breeding bird surveys in the late winter and early spring months are requested, and some limits on noise during the breeding season may be appropriate.

Other areas of concern are risks to the sensitive habitats and wildlife in the project area from potential rupture of the crude oil pipeline, and impacts to riparian vegetation and water quality over the life of the project.

The project proponent may wish to work with the Forest Service to accomplish the eradication of giant cane (*Arundo donax*), in the project area. This is an invasive, exotic plant that reduces the value of the riparian area for wildlife. Such a project could be a means of mitigating some of the negative impacts to riparian vegetation and sensitive wildlife that will accompany construction activities.

For additional information, please contact Gary Earney, our district lands officer, or Sharon Dougherty, our district biologist, at 714-887-2576.

Sincerely,

Gary A. Earney

For ELLIOTT L. GRAHAM
District Ranger

cc: California Department of Fish and Game,
US Fish and Wildlife Service

FOREST SENSITIVE* WILDLIFE AND PLANT SPECIES IN THE CAJON PIPELINE PROJECT AREA

SPECIES	COMMON NAME	STATUS
PLANTS		
Dodecahema leptoceras	Slender-horned Spineflower	FE, SE
Opuntia basilaris var. brachyclada	**Short-jointed beavertail cactus**	C-2
FISHES**		
Rhinichthys osculus	**Santa Ana Speckled Dace**	CSC
REPTILES AND AMPHIBIANS		
Rana aurora draytoni	California Red-legged Frog	CSC, C-2
Rana boylei	Foothill Yellow-legged Frog	CSC
Bufo microscaphus	Arroyo Toad	CSC, C-2
Clemmys marmotata pallida	**Western Pond Turtle**	CSC, C-2
Gopherus agassizi	Desert Tortoise	FE, ST
Cnemidophorus hyperthyrus	Orange-throated Whiptail	CSC, C-2
Phrynosoma coronatum blainvillei	**San Diego Horned Lizard**	CSC, C-2
MAMMALS		
Plecotus townsendii townsendii	Townsend's Western Big-eared Bat	CSC
Euderma maculatum	Spotted Bat	C-2
Perognathus longimembris brevinasus	**Los Angeles Pocket Mouse**	CSC, C-2
Dipodomys merriami ssp. parvus	**Merriam's Kangaroo Rat**	None***
Taxidea taxus	**American Badger**	CSC
Felis concolor	**Mountain Lion**	

SPECIES	COMMON NAME	STATUS
BIRDS		
Cathartes aura	Turkey Vulture	
Elanus caerulus	Black-shouldered Kite	CSC
Accipiter cooperi	Cooper's Hawk	CSC
Accipiter striatus	Sharp-shinned Hawk	CSC
Aquila chrysaetos	Golden Eagle	CSC
Falco mexicanus	Prairie Falcon	CSC
Falco peregrinatus	Peregrine Falcon	FE, SE
Coccyzus americanus occidentalis	Western Yellow-billed Cuckoo	SE
Asio otus	Long-eared Owl	CSC
Otus flammeolus	Flammulated Owl	
Asymdesmus lewis	Lewis' Woodpecker	CSC
Empidonax traillii	Willow Flycatcher	SE
Progne subis	Purple Martin	CSC
Iridoprocne bicolor	Tree Swallow	
Polioptila californica	California Gnatcatcher	CSC, C-2
Toxostoma lecontei	LeConte's Thrasher	CSC
Catharus ustulata	Swainson's Thrush	
Vireo bellii pusillus	Least Bell's Vireo	FE, SE
Dendroica petechia (brewsteri)	Yellow Warbler	(CSC)
Icteria virens	Yellow-breasted Chat	CSC
Piranga rubra	Hepatic Tanager	CSC

Status Codes: FE=Federally Endangered, FT=Federally Threatened, SE=State Endangered, ST=State Threatened, CSC=California Species of Special Concern, C-1=Federal Category 1, C-2=Federal Category 2

* All species are considered Forest Sensitive, unless otherwise indicated.

** In addition to the species listed above, the Cajon Wash area is the principal site currently under consideration for introduction of unarmored three-spine stickleback (Gasterosteus aculeatus williamsonii), a Federally endangered species, by the recovery team for the species.

*** Not listed as Forest Sensitive at this time. (Known from the Cajon Wash area, west from Cucamonga Canyon to Riverside County. There is growing concern for this subspecies, and it may soon be a candidate for federal listing.)

Highlighted species have been recently recorded in the vicinity of the project area. Habitat exists within the project area for other species listed; these species may be present.

HABITATS WITHIN PROJECT AREA (Based on Holland, 1986)

Type No.	COMMUNITY
61330	Southern Sycamore Cottonwood Riparian Woodland
62400	Southern Sycamore Alder Riparian Woodland
37900	Semi-desert Chaparral
37400	Scrub oak Chaparral
32700	Mule Fat Scrub
63310	Riversidian Sage Scrub,
37120	Southern Mixed Chaparral
37200	Chamise Chaparral

3. An annually updated 5-year schedule of activities (using FSH 1309.11, Management Information Handbook, codes), funds (appropriation/function), outputs (recovery increments), by decision variable for each Federally listed species. The Washington Office Wildlife and Fisheries Staff provides instructions and format annually to facilitate input to budget formulation.

2672.3 - Regional Guide and Forest Land and Resource Management Plans. Refer to FSM 1920 and 2620 for specific direction on planning for endangered, threatened, proposed, and sensitive species.

2672.31 - Forest Plan Objectives for Federally Listed Species. Federally listed species Forest Plan objectives must relate to the overall goal of effecting recovery and achieving eventual delisting. Management to achieve species recovery levels is required by law. Management at recovery levels specified in Recovery Plans equates with the National Forest Management Act requirement to maintain viable populations of native and desired non-native vertebrate species. Forest Plan preferred alternatives must meet or exceed recovery objectives.

2672.32 - Forest Plan Objectives for Sensitive Species. For sensitive species, include objectives in Forest plans to ensure viable populations throughout their geographic ranges. Once the objectives are accomplished and viability is no longer a concern, species shall not have "sensitive" status.

2672.4 - Biological Evaluations. Review all Forest Service planned, funded, executed, or permitted programs and activities for possible effects on endangered, threatened, proposed, or sensitive species. The biological evaluation is the means of conducting the review and of documenting the findings. Document the findings of the biological evaluation in the decision notice. Where decision notices are not prepared, document the findings in Forest Service files. The biological evaluation may be used or modified to satisfy consultation requirements for a biological assessment of construction projects requiring an environmental impact statement.

2672.41 - Objectives of the Biological Evaluation

1. To ensure that Forest Service actions do not contribute to loss of viability of any native or desired non-native plant or contribute to animal species or trends toward Federal listing of any species.

2. To comply with the requirements of the Endangered Species Act that actions of Federal agencies not jeopardize or adversely modify critical habitat of Federally listed species.

3. To provide a process and standard by which to ensure that threatened, endangered, proposed, and sensitive species receive full consideration in the decisionmaking process.

2672.42 - Standards for Biological Evaluations

In order to meet professional standards, biological evaluations must be conducted or reviewed by journey or higher level biologists or botanists (FSM 2634). Biological evaluations shall include the following:

1. An identification of all listed, proposed, and sensitive species known or expected to be in the project area or that the project potentially affects. Contact the Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS) as part of the informal consultation process for a list of endangered, threatened, or proposed species that may be present in the project area.

2. An identification and description of all occupied and unoccupied habitat recognized as essential for listed or proposed species recovery, or to meet Forest Service objectives for sensitive species.

3. An analysis of the effects of the proposed action on species or their occupied habitat or on any unoccupied habitat required for recovery.

4. A discussion of cumulative effects resulting from the planned project in relationship to existing conditions and other related projects.

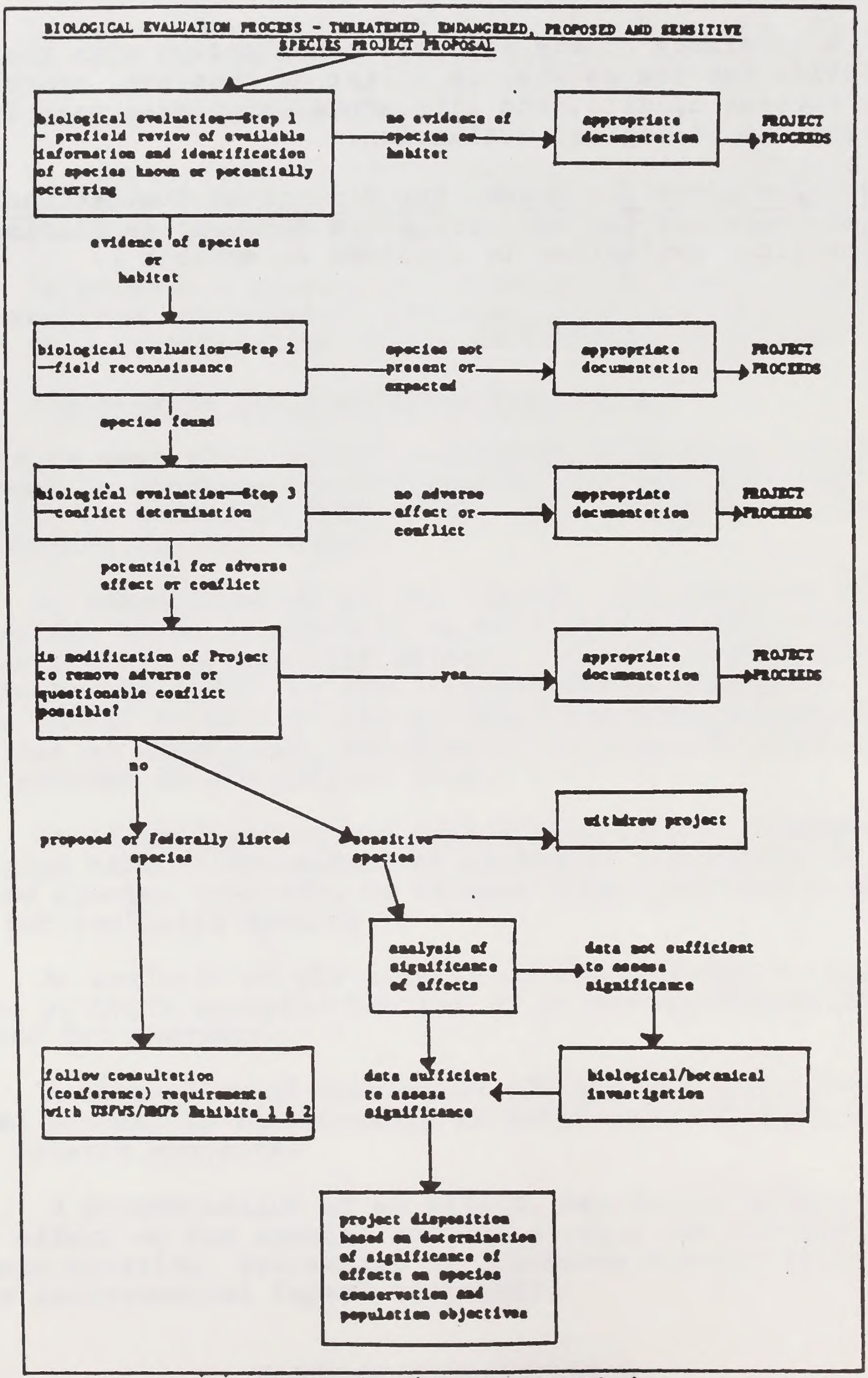
5. A determination of no effect, beneficial effect, or "may" effect on the species and the process and rationale for the determination, documented in the environmental assessment or the environmental impact statement.

6. Recommendations for removing, avoiding, or compensating for any adverse effects.

7. A reference of any informal consultation with the Fish and Wildlife Service as well as a list of contacts, contributors, sources of data, and literature references used in developing the biological evaluation.

2672.43 - Procedure for Conducting Biological Evaluations. A suggested procedure for conducting and documenting findings of a biological evaluation is outlined in exhibit 1.

Exhibit 1


BIOLOGICAL EVALUATION PROCESS - THREATENED, ENDANGERED, PROPOSED AND SENSITIVE SPECIES PROJECT PROPOSAL
biological evaluation—Step 1 - prefield review of available information and identification of species known or potentially occurring
no evidence of species or habitat
appropriate documentation
PROJECT PROCEEDS
evidence of species or habitat
biological evaluation—Step 2—field reconnaissance
species not present or expected
appropriate documentation
PROJECT PROCEEDS
species found
biological evaluation—Step 3—conflict determination
no adverse affect or conflict
appropriate documentation
PROJECT PROCEEDS
potential for adverse effect or conflict
is modification of Project to remove adverse or questionable conflict possible?
yes
appropriate documentation
PROJECT PROCEEDS
no
proposed or federally listed species
sensitive species
withdraw project
analysis of significance of affects
data not sufficient to assess significance
biological/botanical investigation
data sufficient to assess significance
follow consultation (conference) requirements with USFWS/NMFS Exhibits 1 & 2
project disposition based on determination of significance of effects on species conservation and population objectives

GENERAL OUTLINE FOR BIOLOGICAL EVALUATIONS

I. INTRODUCTION

  A. PURPOSE

  B. SPECIES AND THEIR STATUS

  C. HABITAT
    1. CRITICAL
    2. ESSENTIAL
    3. SENSITIVE SPECIES HABITAT TO MEET FS OBJECTIVES

II. DESCRIPTION OF PROPOSED ACTION

DESCRIBE ALL ASPECTS OF THE PROPOSED ACTION THAT ARE PERTINENT TO THE CONCERNS FOR THE SPECIES

  A. LOCATION

  B. ACTIVITY TYPE

  C. DURATION

  D. MAGNITUDE

III. SPECIES INFORMATION

  A. HISTORICAL DATA, SURVEY, QUALITY OF SURVEY

  B. HABITAT STATUS
    1. CURRENT SITUATION: AMOUNTS, QUALITY, DISTRIBUTION
    2. RESULTANT SITUATION: AMOUNTS, QUALITY, DISTRBUTION

IV. EFFECTS OF PROPOSED ACTION

A. DIRECT CONCERN ELEMENTS

B. INDIRECT CONCERN ELEMENTS

C. CUMULATIVE EFFECTS: RELATE EFFECTS AND THEIR ASSOCIATED DEGREE OF RISK BACK TO THE CONCERN FOR THE SPECIES.
  1. T&E INDIVIDUALS: CRITICAL HABITAT; HABITAT ESSENTIAL FOR RECOVERY
  2. SENSITIVE SPECIES INDIVIDUALS: HABITAT NEEDED FOR VIABILITY AND DISTRIBUTION.

V. DETERMINATION

A SUMMATION AND CLEARLY STATED DETERMINATION FOR EACH SPECIES

VI. MANAGEMENT RECOMMENDATIONS.

STANDARDS AND GUIDELINES WHICH WILL REMOVE, AVOID, REDUCE OR COMPENSATE FOR ADVERSE EFFECTS IDENTIFIED IN IV.

VII. LIST OF CONSULTATION AND REFERENCES.

Pipeline Specifications

C

SPECIFICATIONS FOR PIPELINE VALVES

API 60

1.) Specifies maximum pressure as a function of classification and temperature (275 to 6,000 psi for temperatures between -20 and 100°F).

2.) Must have pressure release device.

3.) Gate (block), plug, and ball valves must have indicator to show position and an external method to operate the valve.

4.) Materials, welding, and testing is specified.

5.) Values must be pressure tested prior to shipment from manufacturer.

WELDING OF PIPELINES AND RELATED FACILITIES

API 1104

1.) Must establish procedures prior to production welding. Procedures must be confirmed using destructive testing of the weld. Testing requirements are specified by weld type.

2.) Welder must be qualified. This is accomplished by visual inspection and destructive testing of welds produced using the procedures established.

3.) Criteria for preparing joints for welding are specified.

4.) Inspection and testing of production wells include standards for:

   - o Inspectors
   - o Testing
   - o Acceptance

5.) Requirements for repairs, including post repair testing are specified.

BLM LIBRARY
RS 150A BLDG. 50
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, CO 80225

Form 1279-3
(June 1984)

BORROWER'S CA

TD 195 .P4 C356 1993 v.1
Cajon pipeline project

DATE LOANED	BORROWER

USDI – BLM

TD 195 .P4 C356 1993 v.1

Cajon pipeline project

BLM LIBRARY
RS 150A BLDG. 50
DENVER FEDERAL CENTER
P.O. BOX 25047
DENVER, CO 80225